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Organizational Design of Ambidextrous Organizations

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List of abbreviations

MNC	Multinational Companies
SME	Small and medium-sized enterprises
R&D	Research and development

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1. Introduction

The importance of organizational structures supporting ambidexterity within firms has involved an increasing number of scholars in the recent times (Duncan, 1976; March, 1991; Benner & Tushman, 2002; Lavie & Rosenkopf, 2006; O'Reilly & Tushman, 2008). The common ground in the literature is that ambidextrous firms can pursue both exploiting existing capabilities and exploring new opportunities. Nevertheless, there also exists discrepancies among scholars especially regarding how firms should structure their organization to remain ambidextrous and increase their performance. This topic is not inclusive to the scholars but also to firms in general regarding organizational management. Indeed, firms have been exposed to a rapidly changing environment which leads to inconsistency and aggressive competitiveness.

The term ambidexterity refers to the ability of a firm to cope with conflicting objectives qualified as efficiency and flexibility or adaptability and alignment or exploration and exploitation (Adler e.al 1999, Gibson & Birkinshaw 2004, March 1991). These two components should be part of a firm to be ambidextrous to remain sustainable (Lavie, Stettner & Tushman, 2010). The main components studied in the literature are exploration and exploitation. March (1991) refers exploitation to refinement, choice, production, efficiency, selection, implementation and execution and exploration to search, variation, risk-taking, experimentation, play, flexibility, discovery, innovation. According to their definition, exploration and exploitation require different resources and applications. While firms need to balance both exploration and exploitation within their organization, they are mainly constrained by the number of available resources (Gupta, Smith, & Shalley, 2006; Levinthal & March, 1993; March, 1991; Tushman & O'Reilly, 1996). For a long time, scholars believed that firms needed to choose between exploration and exploitation due to limited resources (Levinthal & March, 1993). This point of view changed with the introduction of the belief that firms can engage in both exploitation and exploration and find an equilibrium (Cao, Gedajlovic, & Zhang, 2009). Currently, some scholars challenge this concept of simultaneity between exploration and exploitation and argue that firms are better off pursuing a

single activity at a time (Ebben & Johnson, 2005; Boumgarden, Nickerson & Zenger 2012).

To manage this ambidexterity, scholars also affirm that firms implement different managerial practices according to exploration or exploitation. Indeed, exploration requires a loose-culture and a decentralized decision making while exploitation involves a strong culture with a centralized decision making (Siggelkow and Levinthal, 2003; Benner & Tushman, 2003). Consequently, firms need to incorporate these managerial practices within the firm including a structural organization that supports this balance between exploration and exploitation. However, the organizational structure of ambidextrous firms has been largely discussed among scholars. They currently use four different structures to support ambidexterity among which, three of them rely on the organizational level (structural separation, temporal separation, domain separation) and one on the individual level - contextual ambidexterity. (O'Reilly & Tushman,1996; Gupta, 2006; Latvie, 2010). These structures show various advantages and disadvantages which trigger conflicts if compared.

Yet, the current literature does not provide major findings regarding the interplay of the structures supporting ambidextrous firms within firms. Thus, this study aims to add some insights regarding this topic. By investigating the organizational structure implemented by some firms, their managerial procedures and their involvement in both exploration and exploitation activities, this research will provide a better knowledge of organizational structure supporting ambidextrous firms. As it has not been clarified yet in the current literature, this research also aims to investigate if differences and similarities occur between the structure of ambidextrous MNCs and SMEs.

For this study, the author will conduct a qualitative research relying on an inductive approach. As primary data, three high-level managers were interviewed among which two belonged to a MNC and one to an SME. Once every interview was transcribed and coded separately to define common grounds, they were then compared to define an overall coding pattern. After the analysis of the primary data, the author suggests three main propositions in accordance with: engagement in exploration and exploitation, organizational structure and management of ambidextrous structures. From a comparison perspective between MNCs and SMEs, the data shows that there exist some similarities and differences not between MNCS and SMEs but also among

MNCs. At first, it appears that MNCs and SMEs engage in exploring and exploiting activities differently due to the availability of resources. Second, the results show that both MNCs and SMEs insist on the importance of a high-level of coordination on both the organizational and individual level, supported by multidirectional information flow. Lastly, to ensure an efficient ambidexterity within the structure, the results show that strong communication between the people from exploration and exploitation units is essential, as well as sharing a clear vision across the organization for both MNCs and SMEs.

Beyond providing insights into the current literature, this study should help managers to better understand the interplay of ambidextrous structures within firms and how to implement a structure supporting ambidexterity.

This study is structured in the following manner: first, the literature of organizational ambidexterity and the managerial implication for ambidextrous structures are reviewed. Second, the research methodology and the procedures applied to this study are described. Third, the findings and three propositions are reported and then discussed according to the theoretical and managerial implications. Finally, the last part presents the limitations of this study as well as suggestions for further research.

2. Literature Review

Along with research on organizational learning, the literature has for a long time debated on ambidextrous organizations, which appears to be critical for the long-term survival of those firms. The primary objective of this chapter is to understand the theoretical background and to identify a gap in this existing literature. At first, the author prospects the concept of organizational ambidexterity, the definitions of exploration and exploitation and the trade-offs that occur when balancing both activities. Then follows an exploration of the managerial implications linked to ambidexterity and the different organizational structures possible to pursue ambidexterity within a firm.

2.1 Organizational Ambidexterity

Organizational scholars such as Duncan (1976) applied the metaphor of ambidexterity, or the ability of a human to perform equally with both hands, to define ambidextrous organizations as firms that implement dual structures to manage activities with both different timelines and managerial capabilities. According to Duncan (1976) and Hambrick (1983), if firms want to survive in the long-term, they should adapt to the environmental variations. Consequently, they should create two different structures to initiate and execute innovation. Based on previous work, O'Reilly and Tushman (1996) studied the complexity for a firm to manage both evolutionary and revolutionary change processes. From their studies, they defined ambidexterity in the managerial context as the ability to accomplish both incremental innovation and radical innovation through a structural organization hosting several cultures, processes, and structures inside the firm. They also drew a theory of organizational ambidexterity which suggests that through ambidexterity, organizations can better perform. This theory was studied further into details and also confirmed by several authors (Gibson & Birkinshaw 2004; Cao et al. 2009). Indeed, Gibson and Birkinshaw (2004) defined ambidextrous organizations as "aligned and efficient in their management of today's business demands, while also adaptive enough to changes in the environment that they will still be around tomorrow."

According to Raisch et al. (2009), there were a total of less than ten managerial papers about ambidexterity until the year 2004 while it increased to eighty by the end of 2009. Consequently, an increasing interest in the concept of ambidexterity appeared among the academicians and therefore led to a broader scope of results. From all the definitions of organizational ambidexterity, a need for a balance between efficiency and flexibility,

adaptability and alignment, exploration and exploitation can be observed (Adler e.al 1999, Gibson & Birkinshaw 2004, March 1991). As most studies do, this paper will refer to ambidexterity as the ability to manage the duality between exploration and exploitation.

2.1.1 Defining Exploration and Exploitation

The overall studies regarding exploration and exploitation state that both activities are beneficial to the sustainability of organizations (Lavie, Stettner & Tushman, 2010). As a pioneer, March (1991) defines exploitation as any activity that includes "refinement, choice, production, efficiency, selection, implementation and execution" while exploration is related to "search, variation, risk-taking, experimentation, play, flexibility, discovery, innovation." According to March (1991), the core of exploitation is the improvement of current capabilities and technologies in contrast with the core of exploration that is experimentation leading to new outcomes. However, these are broad and ambiguous definitions. To limit the scope, Levinthal and March (1993) focused on the knowledge domain and reviewed both definitions. Consequently, they redefined exploitation as the "use and development of things already known" and exploration as "the pursuit of new knowledge." However, it seems like a matter of defining if the trajectory of learning is parallel to the previous one or if it goes in a different direction. While many scholars agree that exploration and exploitation are learning activities, Benner & Tushman (2002) argue that exploration and exploitation are technology search activities. Subsequently, they associate exploitation with local search and exploration with distant search. Along the same line, Rosenkopf and Nerkar (2001) do not consider exploration and exploitation as a learning trajectory. They consider all activities associated with innovation and learning as exploration and all the activities in relation to the existing knowledge as exploitation. While Rosenkopf and Nerkar (2001) only associate exploration with innovation, some scholars disagree in a sense that they also consider exploitation as an innovation. Indeed, they associate exploitation with incremental innovation and exploration with radical innovation (Benner & Tushman, 2003; Jansen, Van den Bosch &Volberda, 2006). Furthermore, Tushman and O'Reilly (1996) add to the literature that the nature of the market will also be associated with exploration or exploitation according to the innovation type required. For instance, in the case of mature markets, incremental innovation (exploitation) is more appropriate while in emerging market, radical innovation (exploration) is required. Similarly, from a

product-market perspective, He & Wong (2004) assert that exploitation is applied to enhance existing product-market while exploration helps to enter a new product market.

2.1.2 Tensions between Exploration and Exploitation

While March (1991) introduced the dual concept of exploration and exploitation, he asserted that there is a high jump between the two of them as they both differ in resources and organizational needs within a firm. Many scholars followed this argument by considering these two as opposing essentials (Duncan, 1976; Tushman & O'Reilly, 1996; Gibson & Birkinshaw, 2004). However, even considered as two ends of a continuum, scholars agree that both alternatives should be implemented simultaneously within ambidextrous organizations. By definition, exploitation goes deeper into the knowledge platform whereas exploration increases the knowledge base. This involves different needs for sources and different approaches. Consequently, this leads to dilemmas when trying to manage both exploration and exploitation at the same time.

First of all, exploration and exploitation are both competing for the resources of a firm. However, to do so, there should be available resources (Gupta, Smith, & Shalley, 2006; Levinthal & March, 1993; March, 1991; Tushman & O'Reilly, 1996). Cao et al. (2009) explain that the resource availability is essential for an organization to choose a balance for ambidexterity. The resources include all ones internally controlled and those externally accessible to the firm. Upon their studies, they also concluded that firms with no sufficient resources might manage a trade-off between exploration and exploitation while a firm with sufficient resources might operate both simultaneously. Consequently, limited resources constrain organizations to choose one kind of activity. In addition, Gupta et al. (2006) claimed that exploratory innovation and exploitative can be both implemented at a high level within a firm. Indeed, these two streams of innovation can also be complementary in domains and therefore they do not compete for resources (Cao, Gedajlovic, & Zhang, 2009).

Secondly, as O'Reilly and Tushman (1996) stated in their early studies, the time focus is different for both activities. On the one hand, exploitation is about enhancing productivity and reducing the risk which results in short-term innovation. On the other hand, exploration is a searching activity that generates innovation on the long-term (March, 1991). In other words, an organization can decide to emphasize the pursuit of new

knowledge for a long-term application and to enhance existing knowledge to answer current needs. Furthermore, March amplifies this dilemma by stating that what is beneficial for an organization in the long-term might not be beneficial in the short-term. Here comes a paradox for managers to balance the two directions. Nevertheless, in line with O'Reilly and Tushman (1996), they argue that both short-term and long-term effectiveness are crucial to any organization. Indeed, Wiggnes and Ruefli (2002) researched on this imbalance and analyzed 6772 organizations across 40 industries to conclude, that most of them achieved short-term performance with only 5% of these organizations able to ensure returns over a period of 10 years or more.

Thirdly, organizations must also find a balance between the paradox of stability and adaptability. According to the literature, exploitation is associated with stability and inertia whereas exploration is associated with flexibility and changes (Lewin, Long, & Carroll, 1999; Farjoun, 2010). Indeed Farjoun (2010) explains that the continuity, predictability, regularity, and discipline occurring during exploitative activities justify its association with stability and inertia. On the other hand, exploration is all about high variance, openness, imagination, search, and flexibility. In the case of an organization focuses mainly on exploration, it results in a trade-off from flexibility to stability. However, the other way around, where exploitation is favored over exploration, organizations build inertia and face organizational challenges when trying to explore and therefore adapting to environmental variances (Freeman, 2007).

Lastly, while it is difficult to manage both exploration and exploitation, scholars wrote that it is more often that organizations leverage their existing competencies rather than exploring new knowledge. (Levinthal & March, 1993; Benner & Tushman, 2002; Gupta, Smith & Shalley, 2006). One of the reason is explained by March (1991) who mentioned that exploration and exploitation have a different degree of certainty regarding the outcomes. While exploitation is predictable and leads to short-term success, exploration is uncertain and far from the locus. Nevertheless, by focusing more on exploitation (present), firms increase the risk of becoming obsolete in the future. March illustrates the concept in his own words: "The basic problem confronting an organization is to engage insufficient exploitation to ensure its current viability and, at the same time, devote enough energy to exploration to ensure its future viability" (1991, p. 105). It is, therefore, a matter of deciding how much should be invested into the present and the future.

Consequently, the trade-offs between exploiting current knowledge and exploring new knowledge bring difficulties to organizations from a learning perspective. As their internal and external resources are determinant to their opportunities, organizations must weight the consequences regarding the usage of short-term versus long-term, present versus future and stability versus flexibility. In other words, it is due to the scarcity of resources that firms might favor either exploration or exploration which leads to different outcomes and ambidexterity ends up counterproductive (Levinthal & March, 1993).

The following table 1 summarizes the exploratory and exploitative innovations according to technological and non-technological terms based on the literature studied.

	Exploratory innovation	**Exploitative innovation**
Innovation	Radical	Incremental
Market	New market	Existing Market
Characteristics	Flexiblity, uncertainty	Adaptability, predictability
Knowledge	New knowledge, broaden the knowledge base	Build and broaden the existing knowledge
Process	Experimentation, search, risk-taking	Refinement, improvement, efficiency
Time focus	Long-term innovation, future	Short-term innovation, present

Table 1: Comparison of exploration and exploitation

Source: Based on March (1991), O'Reilly and Tushman (1996), Lewin, Long, & Carroll (1999), Farjoun (2010)

2.2 Managing Ambidexterity through the Organizational Structure

2.2.1 Managerial Implications for Ambidexterity

The management of ambidexterity can be very complex depending on the organizational design chosen. By definition, exploration and exploitation need both different managerial processes. Simseks, Ling, and Veiga (2006) define exploitation as a top-down process and exploration as a bottom-up process. Also, exploitation units need a strong culture and a centralized decision making while exploration units need a loose-culture and a decentralized decision making (Siggelkow and Levinthal, 2003; Benner & Tushman,

2003). Interestingly, these two contrasting management systems have been studied under the names of organic and mechanistic structures. An organic structure is characterized by a decentralized system and informality within the organization while a mechanistic structure involves bureaucracy and a hierarchic structure (Russell and Russell, 1992). Consequently, an organic structure is associated with the dynamic environment characterized by a lateral communication and a mechanistic structure is associated with a stable environment (Godwin and Gittel, 2011). By analogy, organic and mechanistic structure can respectively be associated with exploration and exploitation.

Furthermore, Benner and Tushman (2003) highlighted the importance of limiting management processes among the exploration units as it inhibits experimentation. They asserted that if one firm develops too much its management processes, it will undermine its exploration activities. At the same time, management processes help maximize the efficiency and the control for exploitative units. Smith and Tushman (2005) took a different perspective and argued that to reach proficiency, exploitative units have discipline and strongly embedded routines. Their primary role is to decrease the variance of the outcomes and helps predictability while explorative units run on creativity, non-routine and aim to increase the variance in the outcome.

Some scholars introduced an alternative to the balance of exploration and exploitation. Whereas the ambidextrous organizational design relies on a simultaneous balance between exploration and exploitation (Raish and Birkinshaw, 2008), organizational vacillation is a dynamic method that consists of sequences between the choice of structures that promote either exploration or exploitation (Siggelkow and Levinthal, 2003). Indeed, contrary to ambidextrous organizational design that seeks for simultaneity between exploration and exploitation, organizational vacillation considers that a structural shift between centralization and decentralization leads to higher levels of exploration and exploitation to finally dissolve inertia within a firm (Gulati and Puranam, 2009). This method states that balancing both exploration and exploitation is not the necessary solution to implement a complementary between these two. On the contrary, if a firm is aiming for long-term performance, it is the levels of exploration and exploitation that influences the performance and not the level of balance (Siggelkow and Levinthal, 2003). In fact, organization vacillation relies mainly on a focused orientation towards exploration or exploitation (Nickerson and Zenger, 2002). Whereas the formal organizational structure can shift suddenly, the informal organization structure changes

are more continuous. Through modulations, an organization can achieve intermediate levels and therefore to produce transitory stages of dual capability and possible high-performance direction (Nickerson and Zenger, 2002). Ten years later, they explained their findings through the following figure 1. As observed, the performance in areas 1 and 2 is troublesome to reach as it requires a certain balance between exploration and exploitation. However, the performance range is bigger and more accessible during the phases of vacillation (Boungarden, Nickerson & Zenger 2012).

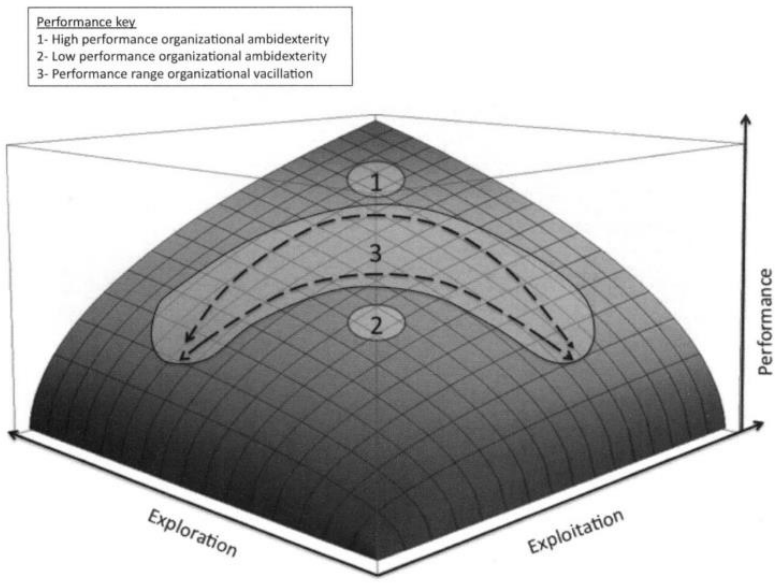

Figure 1: Performance comparison of ambidexterity and vacillation strategies
Source: Boumgarden, Nickerson & Zenger (2012).

Furthermore, some other studies revealed that firms focusing on one activity performed better than those pursuing the two activities (Ebben & Johnson, 2005). Through the analysis of 200 small firms, the results showed that the firm performance was negatively impacted when both efficiency and flexibility were pursued at the same time. Others recommended that firms choose to pursue a single strategy until failure instead of spending resources to adapt over a time period (Knott & Posen, 2005).

2.2.2 Organizational Structures for Ambidexterity

In the early studies, scholars such as Christensen (1997) and Duncan (1996) argue that explorative activities should be separated from the rest of the activities to avoid negative spillovers within the exploitative units. In fact, O'Reilly and Tushman (1996) asserted that exploration and exploitation should be physically and culturally divided into units among the organizational design and managed through various teams, with different incentives and measurements. In contrast, others counter this argument by stating that both activities should be recombined in a value-added manner within the organizational design (O'Reilly and Tushman, 2008). However, scholars who attempted to find an organizational design that enables firms to explore and exploit in an integrated manner have pointed out some challenges. Indeed, some inconsistencies in the design lead to a decrease in the firm's ability to achieve the targeted performance. Therefore, they consider the design of ambidextrous organizations extremely difficult. (Christensen, 1997; Duncan 1976, Tushman & O'Reilly, 2008, 2011; Gibson and Birkinshaw, 2004). Overall, many studies explain that conflicts created through the balance of exploration and exploitation are solved at the organizational level (O'Reilly & Tushman, 1996; Raisch & Birkinsahw 2009).

While O'Reilly and Tushman (1996) explain how a firm can achieve ambidexterity through a structural separation, Gupta (2006) and Lavie (2010) introduce their own organizational designs: temporal separation and domain separation. The three organizational designs are pursued through different manners and have different challenges and outcomes. Each of them will be explained in details in the next section. On the other hand, not everyone believes that the challenges of ambidexterity can be addressed at the organizational level. Other assert that it can be solved on the individual level. For instance, Gibson and Birkinsahw (2004) focus on the organizational context which gives employees the ability to practice both exploration and exploitation. It is from individual actions that ambidexterity can be managed.

a. Structural Ambidexterity

Since the early work of Duncan (1976), it has been clearly stated that to achieve ambidexterity organizations need to separate their business units via a dual structure. Indeed, structural ambidexterity follows the idea that organizational design should isolate

explorative activities from exploitative ones through the distinction of organizational units embracing different capabilities, incentives, processes and cultures at the same time as implementing a full integration between exploration and exploitation (Benner and Tushman, 2003). In other words, the units are integrated through a shared corporate vision and a set of values while being physically separated in the meantime (O'Reilly & Tushman, 2004), as shown in figures 2a and 2b. The path from structural design to ambidexterity is drawn through the simultaneous focus on alignment and adaptation (Gibson and Birkinshaw, 2004). Structural separation was previously a popular solution for reaching ambidexterity. For example, R&D centers would be oriented towards exploration while the production units would be focused on exploitation. Even though some findings were inconsistent, most scholars agree that structural ambidexterity entails independent structural units for exploration and exploitation, integrated in a way to leverage the assets, with a shared a vision and leadership that facilitate the achievement of ambidexterity (Smith & Tushman, 2005; Lubatkin, et al. 2006; Jansen, et al. 2009; O'Reilly & Tushman, 2011).

a)

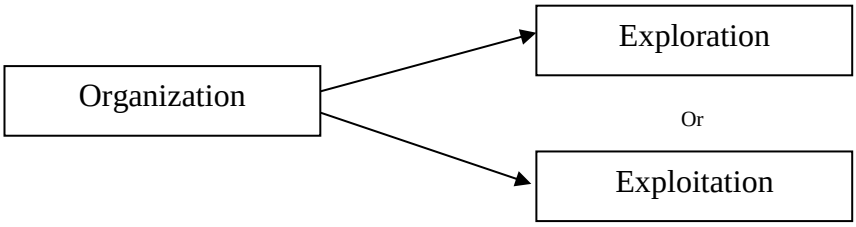

Figure 2a: Structural separation organizational structure

Source: Author analysis based on Duncan (1976), Benner and Tushman (2003)

b)

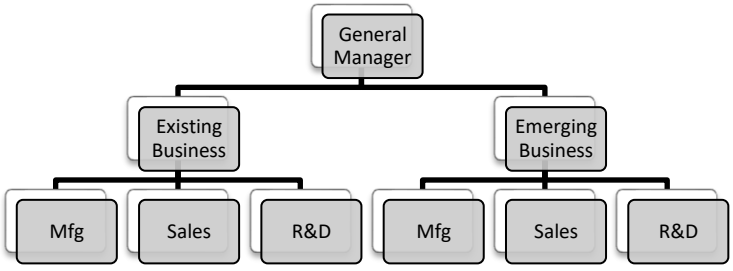

Figure 2b: Structural separation organizational structure

Source 2b: Adapted from O'Reilly & Tushman (2004), illustration p. 78-79

However, the key challenge remains in the coordination of exploration and exploitation across these distinct units (Duncan, 1976). The separation of the units can generate problems in transferring innovative ideas across the units, and therefore idea transfer and integration might be difficult to manage. Indeed, the separation can lead to isolation (He & Wong, 2004). Also, most scholars have studied the outcomes of structural separation at the inter-organizational level but not on the intraorganizational level. Consequently, Kauppila (2010) did a case study and concluded that both inter- and intra-organizational levels should be implemented in a complementary way for ambidexterity.

b. Contextual Ambidexterity

In contrast with the structural separation, contextual ambidexterity relies heavily on the individual level and not the organization. The ambidexterity is present in the mind of employees instead of the organizational structure. Some scholars such as Gibson and Birkinshaw (2004) criticize structural separation as it would lead to isolation. To do so, they assert that firms can achieve ambidexterity through the nurturing of organizational context involving trust, support, discipline and stretch. It is a simultaneous integration of capabilities for alignment and adaptability that relies on the organizational context (see figure 3). This context includes beliefs, processes, and systems that motivate individuals to choose between exploration and exploitation in their task (Ghoshal & Barlett, 1994). Indeed, contextual ambidexterity takes into account the complementary of exploitation and exploration activities while allowing differentiated attempt in both activities.

To illustrate this organizational design, Adler et al. (1999) applied it with the example of Toyota where the employees are working both in the assembly lines and on ways to make their jobs continuously more efficient. In this context, management and cultural support are highly needed to ensure the ambidexterity of the employees.

This new approach is gradually attracting researchers while leading to positive studies. For example, Simsek (2009) asserts that contextual ambidexterity develops organizational learning that enables the integration of exploration and exploitation. Through organizational learning, organizations are able to reduce costs related to coordination between structural units or transition costs occurring in structural and sequential ambidexterity. Furthermore, employees have the flexibility to choose how to

align and adapt and to allocate a given time to conflicts related to balancing both (Gibson & Birkinshaw, 2004).

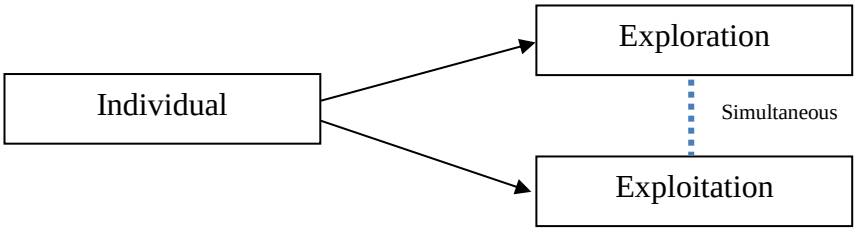

Figure 3: Contextual organizational structure
Source: Adapted from Gibson & Birkinshaw (2004)

Because contextual ambidexterity is a bottom-top approach that requires individuals to be highly involved into the organizational culture and context (Gibson & Birkinshaw, 2004; Simsek et al., 2009), more research is required to define precisely which culture and context are needed.

c. Sequential Ambidexterity

While exploration and exploitation can be structurally distinct, they can also separate over time. As mentioned previously, recent studies have proposed an oscillation back and forth between exploration and exploitation. Also described as punctuated equilibrium by Gupta, Smith, and Shalley (2006), temporal sequencing of extended periods of exploitation and short intermittents of exploration within the same business unit is another way of balancing exploration and exploitation. For example, a business unit may decide to use a mechanistic structure for a given period and shift to an organic structure for another period, until it creates a cycle (see figure 3).

Brown and Eisenhardt (1997) suggested that firms implemented "semi-structures" and "rhythmic switching" between phases of exploration and exploitation in order to cope with technological and product changes. Boumgarden, Nickerson, and Zenger (2012) assert that this vacillation is more practical to alternate between formal structures than changing the informal side of the organization. Similarly, Siggelkow and Levinthal (2003) advised firms to implement decentralization sequentially in order to become more effective in both activities. By adopting a separated organizational design for a specified

period and more integrated design for another period, organizations transfer information and generate knowledge differently which leads to an increase in the production. Actually, Lavie & Rosenkopf (2006) reinforce this approach by stating that an organization might choose to either exploit or exploit, at any time in any domain, across them and temporally to create the balance. Sequential ambidexterity has been applied to case studies regarding alliances. As Rothaermel and Deeds (2004) studied biotechnology firms, they exemplified the sequence of moves of ambidexterity such as (1) exploration alliances, (2) product developments, (3) exploration alliances, (4) products the on market.

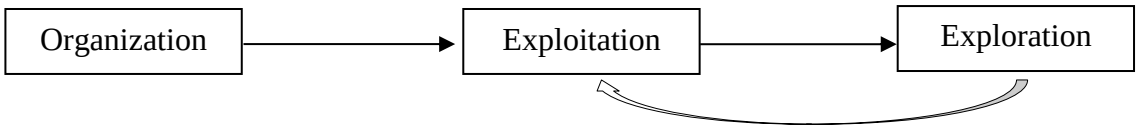

Figure 4: Sequential organizational structure

Source: Adapted from Gupta, Smith, and Shalley (2006); Boumgarden, Nickerson, and Zenger (2012)

However, in the analysis of studies regarding organizational ambidexterity, O'Reilly (2013) raises a lack in the literature about the transition occurring between these changes. Despite all the benefits of implementing a sequential ambidexterity, there are only a few findings regarding the transitional phase. Sequential ambidexterity leads to some major changes at all levels and therefore to an abrupt transition. Lately, no author talked about the manner to go from exploitation to exploitation and what the implications are.

d. Domain Separation

In contrast with the previous designs, domain separation allows firms to develop ambidexterity not across the entire organization or within one domain but with a balance between several domains (Lavie, Stettner & Tushman, 2010), as shown in figure 5. Until now, domain separation has received very little attention as most studies focus only on one domain. Nevertheless, some scholars have challenged the structural and temporal separation structure, which have implicit trade-offs when balancing exploration and exploitation. In fact, firms face resources allocation trade-offs when seeking to maintain conflicts within a domain. However, domain separation enables a firm to react to dynamic

changes by pursuing either exploration or exploitation in a given domain, not within (Lavie et.al 2009). Domain separation is particularly applicable to alliances formation. For example, firms can choose to either explore or exploit within the function or structure domain. For example, a firm can have recurrent partners (structure exploitation) and establish R&D alliances with them (function exploration). Also, this firm can also choose new partners (structure exploration) and initiate marketing alliances (function exploitation).

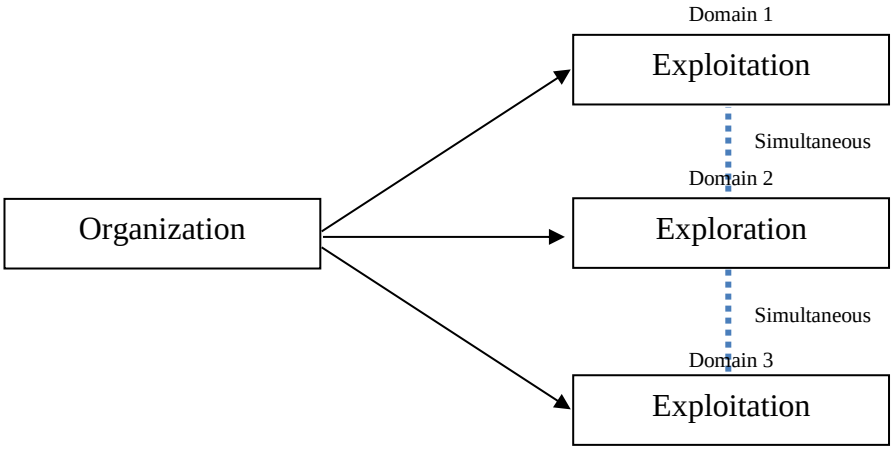

Figure 5: Domain separation organizational design
Source: Adapted from Lavie, Stettner & Tushman (2010)

Therefore, it creates a balance across domains where exploration is pursued in one domain while exploitation is pursued in another domain. Lavie, Kang and Rosenkopf (2009) also explain that the benefits of domain separation are relative to the size of a firm. As bigger firm have more rigid routines within domains, it is more difficult for them to balance exploration and exploitation within domains. Consequently, domain separation can help big firms to be ambidextrous. The same authors studied the U.S-based software firms to compare the market value and the net profits when the balance is made across domains and within domains. As a result, the firm performance and net profit declined when the balance occurred within domains and not across domains.

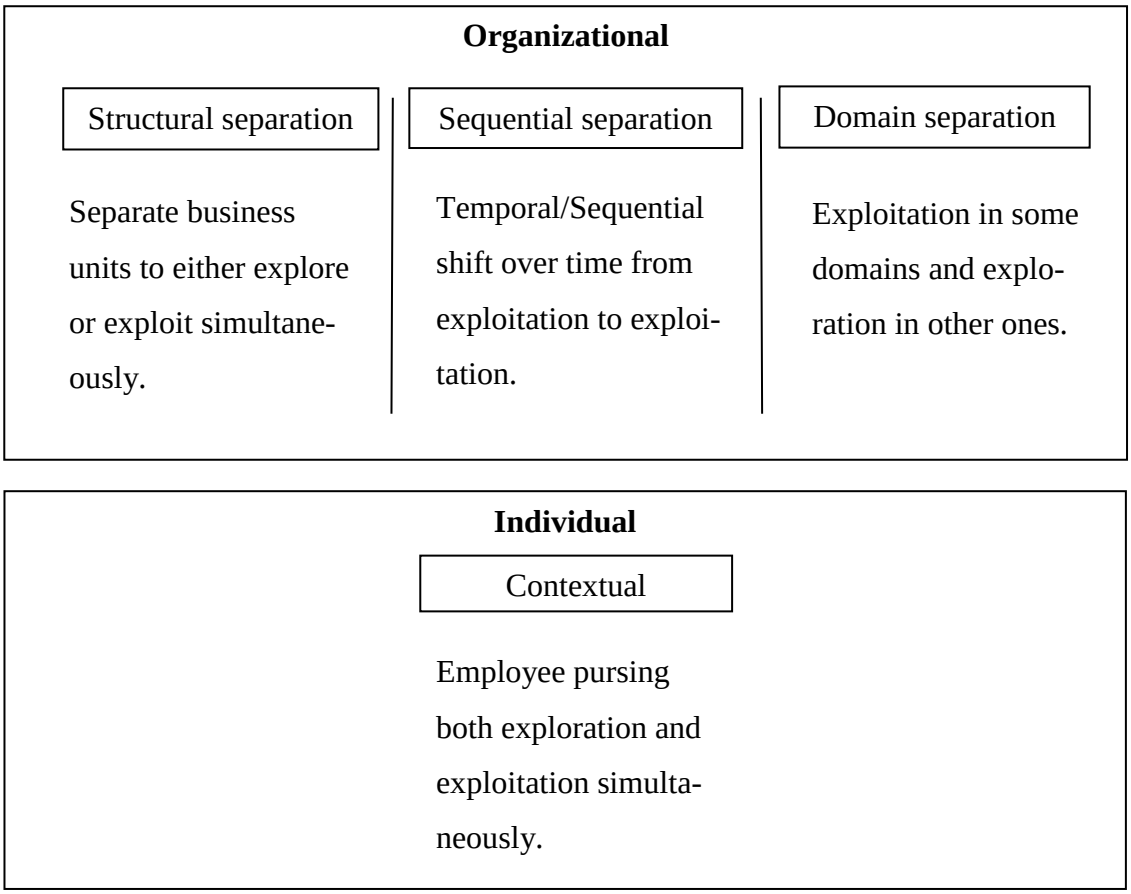

Figure 6: Summary of the various structures supporting ambidexterity

To summarize, there exist four different structures for ambidextrous organizational designs as illustrated in figure 6. These structures differ in criteria which leads to various advantages and disadvantages. The literature does not provide which type of firm could be associated with these structures and remain generally descriptive. Each scholar seems supporting one structure while no link between these structures has been studied.

Throughout the literature, it remains clear that firms need to achieve exploration and exploitation to remain ambidextrous and cope with changes. While conflicts can occur when engaging in both activities, including managerial practices, it remains unclear which structure supports ambidextrous firms and in relation to which context. Consequently, this study will focus on the interplay between the different structures and their implementation within both MNCs and SMEs.

3. Methodology

In this chapter, the author explains the methodological approaches applied to the research. The first part consists of describing the research design and justifying why a qualitative method and an inductive approach were chosen. The second part concerns the data collection and the last part explains how these data were analyzed. It gives an overview of the steps followed to extract valuable information for the study.

3.1 Research Design

As the purpose of this study is to explore the interplay of organizational structures of ambidextrous organizations within a firm, the author conducted an exploratory research (Blumberg, Cooper & Schindler, 2014; 155). To conduct this research, it was more appropriate to use a qualitative approach rather than a quantitative approach. Indeed, a quantitative approach consists of collecting data with the aim of generating numbers and statistics while a qualitative approach provides non-statistical results (Steckler et al. 1992). Since it is an exploratory research, the choice to pursue a qualitative research can be supported by the following reasons. The first advantage is its application to many types of research and that it can provide in-depth results through the access to different perspectives (Easterby-Smith et al. 2008). Indeed, it allows a dialectical approach during which one can enlarge and deepen the perspectives of the participants instead of confirming the understanding of a single individual (Greene, 2007). For our research, it is beneficial to understand the different views of each firm regarding their organizational structure. Also, as each firm has a specific way of structuring their organization, it is critical to reach as many details as possible. Another benefit is the possibility to have of an adequate sample size which can save time and money (Bogdan & Biklen, 1997). An adequate sample size is any number that enriches the understanding; therefore it is can also be smaller than the average (Sandelowski, 1995; 183). Limited by the time to conduct the research, it allows the researcher to gather rich data while having a considerable small sample. Whereas some scholars support the qualitative approach, others have counter-arguments such as concerns regarding the subjectivity and the non-representativeness of the studies (Blumberg, Cooper & Schindler, 2014; 155). Indeed, as the sample size is reduced, the results belong to specific cases and therefore can lead to some discrepancies when applied to a wider range. In other words, one must be careful when generalizing the findings based on

small sample size as it might not apply to every case. Also, researchers might bear unavoidable bias while collecting data which could alter the results. However, in the frame of this research, it is considered appropriate to decide on choosing a qualitative approach as this is an investigation of the interplay of ambidextrous organizational structure among firms.

To link the theory and the research, one can choose between two theoretical approaches: deductive and inductive. A deductive approach explains the relationship between two variables or concepts through the development of a theory and hypotheses. The hypotheses are developed and tested along the deductive approach, and if successful, the findings lead to a generalization (Robson, 2002). As this approach is very structured and implies the collection of quantitative data, the author decided to not focus on this one (Creswell, 2002). On the other hand, an inductive approach works inversely. It starts with a data collection or case studies to finally formulate a theory. Less related to generalization, an inductive approach helps to identify the meanings that participants associate with experiences (Creswell, 2002). As described by Scriven (1991, p.56), this approach entails a "goal-free" evaluation that enables the researcher to discover actual effects rather than calculated effects, which fits with the purpose of the study.

Therefore, to deepen the field of ambidextrous organizational structures for firms, this study follows a qualitative method and an inductive approach.

3.2 Data Collection

To proceed with the data collection, it is important to choose the most appropriate method regarding the objectives of the research. By following a qualitative method and inductive approach, the data can be collected in verbal or written forms such as interviews or reports (Smith, 2015). As interviews contribute to theoretical generalization (Eisenhardt, 1989), it was used as primary data collection. The main advantage of conducting interviews is that it gives the individual perspectives on the topic. In addition, the researchers can also use open-ended questions to find out what is meaningful to each participant (Dunn, 2005). On the other hand, it requires the participants to understand the concepts of the research issued from scientific papers and each participant does not have the same ability to discuss their perceptions.

There exist three different sorts of interviews: structured, semi-structured and unstructured. A structured interview aims to answer specific questions and is conducted in the same manner to each participant. A semi-structured interview covers a list of topics but also allows the participants to give their views on the topics. Lastly, an unstructured interview is essentially guided by the participant who tells a story (Dunn, 2005). For this research, semi-structured interviews were conducted because it enables the researcher to not only get insights regarding the focus of the research but also to access important information that would not be disclosed otherwise. Furthermore, it has been recognized as the most effective and convenient approach to collect information (Kvale and Brinkmann, 2009).

However, collecting information through semi-structured interviews required a diligent preparation. First, the list of topics to be discussed with the interviewees needed to be wisely determined. Not only the topics have to be related to the literature review but also neutrality must be respected to avoid any bias. Therefore, the questions were simple, direct and clearly formulated to get better results (Shaughnessy, Zechmeister & Zechmeister, 2012). From a researcher perspective, it is sometimes difficult to realize that the interviewee is not familiar with the scientific glossary. To ensure the best possible understanding for each interviewee, the questions were formulated in a more common glossary (appendix 1). As all interviewees occupied a high position within their firms, their time was limited. Beneficial to a constructive discussion, the interviewer sent the questions a few days earlier before the interview.

To find potential interviewees with expertise in this topic and in a short period, the interviewer used a purposive sampling. Bearing in mind the research question, it remained important to target companies that are ambidextrous and that could provide a heterogeneous sampling with different firms and perspectives. Because it is difficult to obtain free-time from the potential interviewees working in large firms, this study includes two interviews with highly positioned managers from a different multinational company and one interview from a top manager of an SME, which is directed by experienced managers. These interviews provided different perspectives and findings that comforted us in the quality of this study.

Interviews

While following an inductive approach, the interviews were semi-structured with questions organized according to the literature review. Nine questions were divided into three main topics: ambidextrous organizational structure, tensions within ambidexterity and managerial implications for ambidexterity. These questions were mainly open-ended to gain more insights from the respondent while keeping the focus on the study.

The first interview was conducted in the middle of July while the two others occurred a couple of weeks later. On average, each interview lasted between thirty and forty minutes and was performed following the same procedure.

For convenience reasons, the interviews were conducted via traditional phone calls and were recorded with the informed consent of the interviewees. It is well-known that researchers can access different insights through face-to-face interviews or Skype calls, but it has been proved that "telephone interviews are not better or worse than those conducted face-to-face" (Miller, 1995). Aforementioned, the interviewees agreed on a short-time notice to participate in the study which could justify their request for telephone interviews instead of face-to-face interviews. Following the advice of Saunders (2009), each interview was transcribed within one day after it was undertaken. A manual transcription method was preferred over other methods as it allowed the author to correct grammatical mistakes along the transcription and helped to organize the data for a better analysis.

While two interviews were performed in English for the ease of transcription and analysis, one interview was conducted in the native language of the interviewee meaning in French. However, this latter was translated into English to have more homogeneous data.

3.3 Interviews Background

To give the reader a better understanding of the context in which the data was collected, the position of each interviewee and their respective company are described in the following section. To keep their anonymity, fictive names and letters were attributed to both interviewees and companies.

Company A

In the first case, Interviewee A worked for more than three years in a world-leading multinational engineering and electronics company as general manager of the French subsidiary. According to the annual report of 2017, company A realized a turnover of 78 billion euros from a wide range of products starting from automotive parts to home appliance. Most of their revenues occurred in Europe (52%), Asia Pacific (30%) and North America (16%) while few occurred in South America (2%). As of December 2017, the company employs more than 400,000 people who are spread around the globe. While most of the employees are scattered in Germany, the company has many wholly owned subsidiaries all over the world. The most considerable ones (regarding the number of employees) are located in India, Brazil, China, Turkey and France. Nowadays, the operations are separated into four main business sectors: consumer goods, industrial technology, energy and building technology and mobility solutions. Furthermore, company A is well-known for its traditional products but also for generating innovative products.

Throughout the last ten years, Company A felt the need to innovate as the environment is changing at a very high speed. Thereupon, they launched heavy investments in Research and Development, which led to an average of 3900 patents published per year. As seen in figure 7, Company A has increased its R&D costs from 86,78% while maintaining a constant relation to the percentage of sales even though there was a critical increase in the R&D costs in the last three years. This implies that Company A is now able to generate revenues more efficiently through R&D.

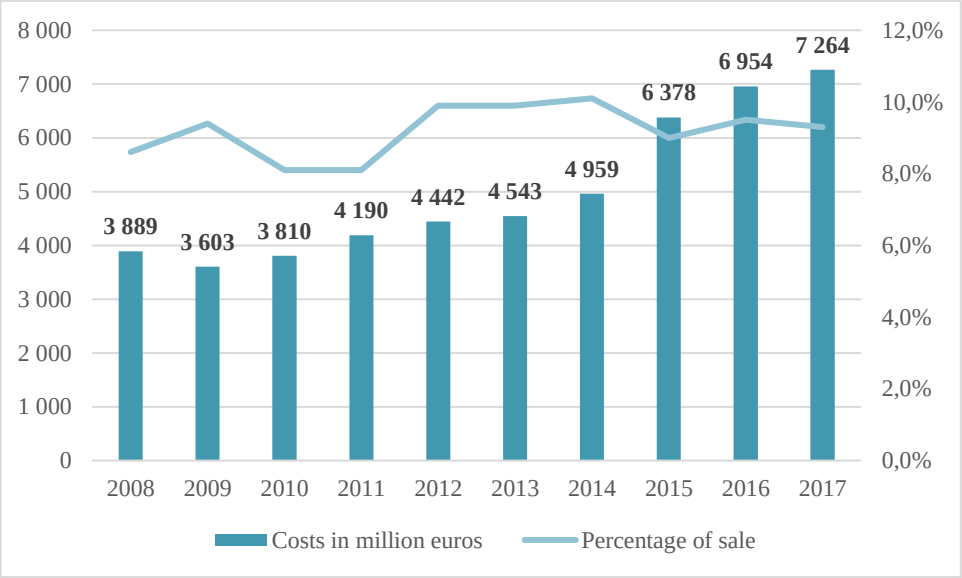

Figure 7: Company A's R&D costs and their respective percentage of sale from 2008 until 2017

Source: Based on the annual reports from 2008 until 2017

Consequently, Company A is a good fit to our research in which we try to understand how firms manage their ambidexterity through their organizational structure.

Company B

The second interviewee, Interviewee B holds the position of Vice President of HR in Research and Innovation in a multinational firm focusing on personal care, Company B. Based on their annual report of 2017, their revenue reached 26 billion euros which makes them the largest cosmetics company in the world. While the head office is located in Paris, Company B has developed an international unit in several cities such as New-York, Montreal, Melbourne, Copenhagen and Dusseldorf. As of April 2017, Company B employed 82,600 persons while operating in 150 different countries.

As they realized the importance of entering emerging markets, which collectively represents the biggest share of the personal care industry, Company B aimed to increase their sales in those countries and therefore needed to develop its ambidexterity at its best. While finding new ways to enter these new markets, Company B had to stay focus on their current business. By observing the following figure 11, it is observable that in the last seven years, Company B maintained its sales in Western Europe whereas they increased them from 71,27% in North America and by 58.21% in emerging markets. Also, a shift

in the distribution of the sales occurred. Although in 2010 the consolidated sales represented 39,6% in the Western European market, 23,7% in the North American market and 36,7% in the emerging markets, seven years later the distribution was different. The consolidated sales in emerging markets led with 40,5%, followed by Western Europe with 31,2% and North America with 28,3%.

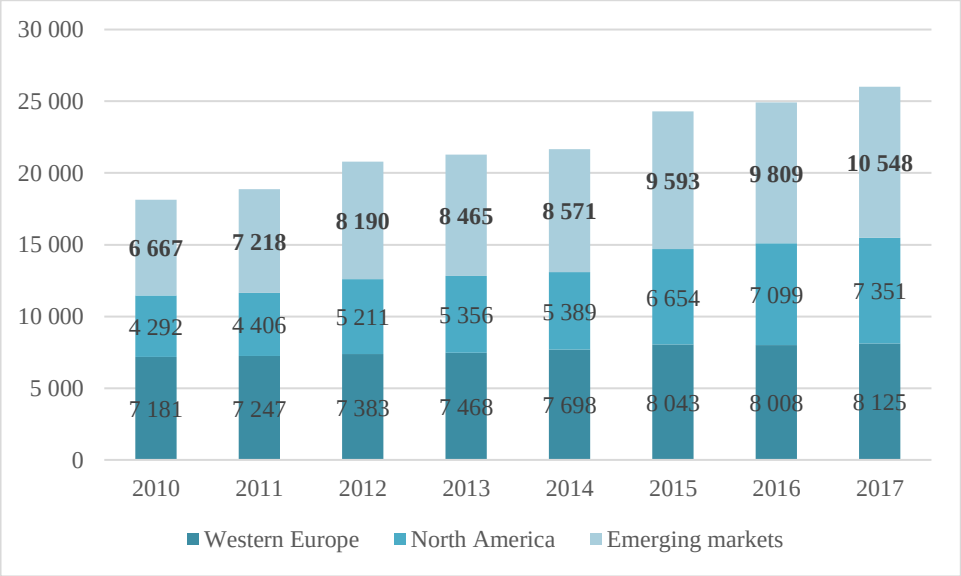

Figure 8: Consolidated sales of Company B's global cosmetic branch 2017, by geographic zone (in million euros)

Source: Based on the annual reports from 2010 until 2017

In line with the need to enter new markets, Company B has invested 877 million euros in Research and Development and has filled 498 patents in the sole personal care market. On the graph below, we observe an increase of 62,71% in the R&D expenditure worldwide in the last seven years.

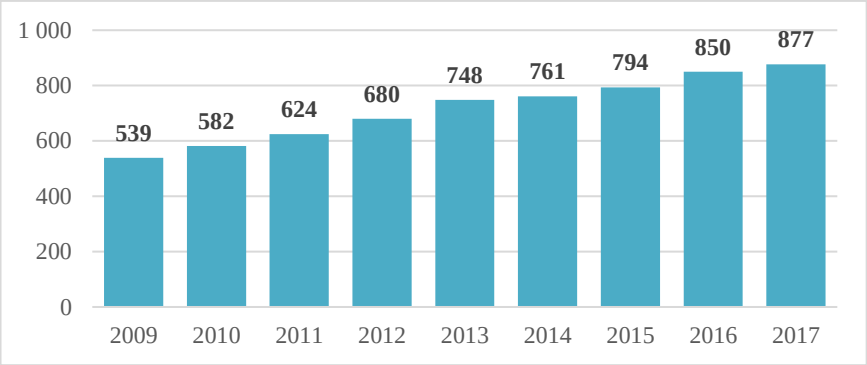

Figure 9: R&D expenditure of Company B worldwide from 2009 to 2017 (in million euros)

Source: Based on the annual reports from 2009 until 2017

Nowadays, the organization is divided into 16 evaluation centers, three global centers and six regional hubs based in Brazil, India, China, South Africa, Japan and the United States. In order to ensure that their ambidexterity is leading them to success, Company B insists on the importance of a proper organizational design which caught our interest in conducting further research with them.

Company C

Lastly, Interviewee C holds the position of Vice President, Global Business Development in Company C, a European SME (Small and Medium Enterprise). Company C links research and industry through a specific innovative concept called TRL (Technology Readiness Level). They operate in an open-innovation mode where the best innovation ideas are chosen to be implemented in the company to be later transferred to the industry. On their official website, they explain the reason why they outsource innovation. Firstly, it minimizes the research costs and makes the innovation cheaper. Secondly, it allows them to gain time and to innovate faster. Thirdly, it is safer for them as the technical and financial risks are minimized for the industrials. Lastly, as they screen all the innovations, they are sure of the impacts of each innovation on the future.

The focus of Company C is the automotive propulsion systems, where they improve the performance, energy efficiency, and the environment neutrality of those systems all over the world. Their business model relies on granting licenses, transferring technology, providing expertise in engineering services, and improving the products of licensees while it incorporates their technologies. With a team of experienced managers, Company

C capable of designing its organization effectively to promote innovation and development. The interview with Interviewee C will help us explore if there are some differences between MNCs and SMEs in the manner they manage ambidexterity.

3.4 Data Analysis

Upon completion of the interviews and their transcription, the primary data showed that the findings were comparable to the secondary data retrieved in the literature section. While the last two interviews were complete, the author asked for some further information to the first interviewee. We believe that the author gained more experience along the three interviews and was able to dig deeper into the subject towards the end. Therefore, it required some additional information from the first interviewee.

Following an inductive approach, the data collected could be explored to find themes or topics which will lead the focus of the analysis. However, Yin (2003) states that this approach could be particularly difficult for the inexperienced researcher. Consequently, the author decided to follow the structure of the semi-structured interviews to organize the data. As the structure of the interviews was directly related to the literature review, it made sense to use the same topics to organize the data.

The author followed the steps explained by Schmidt (2004) to analyze the semi-structured interviews. As a first stage, the author read carefully all the interviews one by one. It was critical to understand that each interview is different and cannot be compared; only similarities and differences are observed. During the analytic reading, the author defined a topic for each passage. The list of topics is provided in the table below:

- Innovation sources
- Ambidexterity within MNCs and SMEs
- Reasons to change the structure
- Domain separation in SMEs
- Managing ambidexterity
- Tensions between exploration and exploitation
- Future outlook
- Exploitation
- Exploration
- Organizational Structure
- Communication
- Advantages of the current structure
- Challenges from the current structure

Table 2: List of topics from the first stage of coding

Source: Author analysis from primary data collection

Then, the second stage consists of putting the topics together to create categories. As the author created a list of individual topics, it was necessary to search for variations and relationships between them and to assemble them to create analytical categories. As a result, three main analytical categories related to our study were established: exploration and exploitation within firms, organizational structure, and managerial implications. (See figure 9).

1) Exploration and exploitation within firms
   - Exploitation
   - Exploration
   - Tensions
2) Organizational structure
   - Ambidexterity within MNCs and SMEs
   - Advantages of the current structure
   - Challenges from the current structure
   - Structural separation
   - Domain separation in SMEs
   - Reasons to change the structure
3) Managerial implications
   - Future outlook
   - Managing ambidexterity
   - Communication

Figure 9: Analytical categories for coding
Source: Author analysis from primary data

Lastly, these categories were applied with each passage of the interviews associated with one of these categories, which led to the coding process. An example of the data structure can be seen in figure 10. Also, the transcript of each interview is available in the appendices 2, 3, and 5 as well as the coded segments in appendix 5.

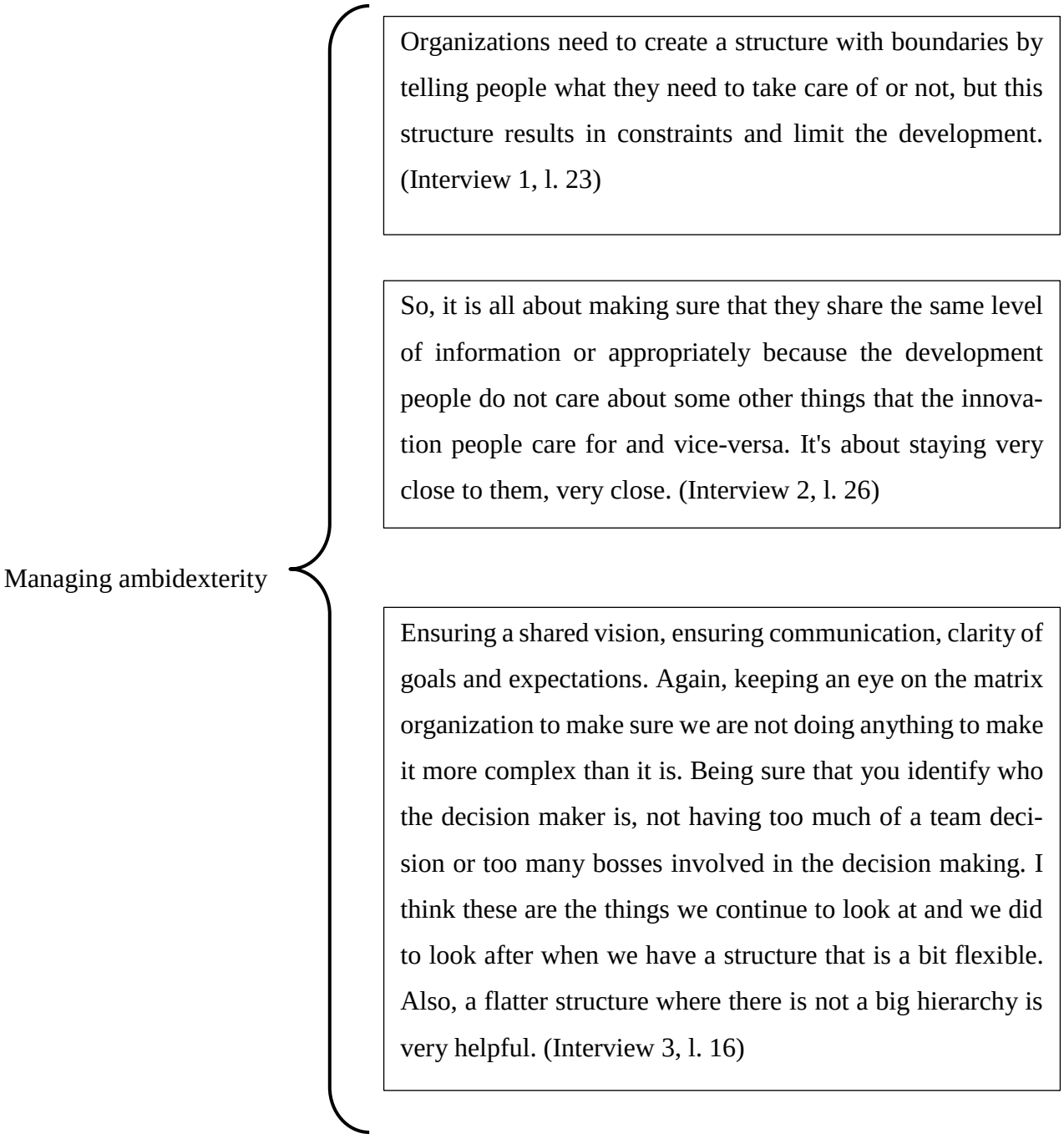

Figure 10: Sample of data structure.

4. Results

This chapter provides the findings extracted from the interviews according to the analytical categories defined in the coding process. As part of an inductive approach, the results led to three main propositions, which will be defined following each analytical category. Each section will be summarized with the comparison tables 3, 4, and 5.

4.1 Exploration and Exploitation within Firms

Company A

In the first case, Interviewee A explains that the firm is involved in both exploration and exploitation activities. Company A has two main categories of entities; those market-oriented and those internally oriented. The market-oriented entities include the client-marketing units (exploitation) and the internally-oriented entities include both R&D and Advanced Engineering units (exploration). Firstly, the Marketing & Sales teams are responsible for the innovation coming from the external environment which is mainly based on improvement or refinement of existing products. Their primary focus is the time present, as they interact with the actual market. Secondly, Interviewee A pointed out that "*the research teams work on these new technologies that improve the products and the development teams make the defined products"* (Interview 1, l.97-98). They develop products based on certain criteria. Their time focus is the next 5-10 years. Lastly, the Advanced Engineering teams are spread in several cities and have as main objective to discover how the society will be in 2030. *"Indeed, it is very advanced as it is more 10-20 years and you have people who are paid to do only this"* (Interview 1, l.55-56). They have an extended timeline where they reflect on the future based on current issues: *"new lifestyles, over-population…"* (Interview 1, l.59). From their reflection, they can generate new paths for innovation among the firm. However, Interviewee A mentioned that not all companies could afford to have an Advanced Engineering team as it is very costly. Also, at the beginning of the interview, it was clearly stated that these exploration and exploitation activities are mainly related to big firms as it requires a lot of resources that smaller companies do not have such as human resources.

Company B

In the second case, Interviewee B explains that they do not have separate units working on exploration or exploitation, as in the first case. Conversely, the employees are working in teams that are either focusing on exploration or exploitation. Among the exploration teams, Mrs Caroline mentioned the research team that is responsible for developing new products while their operational marketing and supply chain teams focus on improving the existing products and therefore represent the exploitation activities. However, there are many other units divided into exploration and exploitation. Interviewee B explained that in one team, employees have different expertise and function in the firm which brings a synergy in the organization. In addition, their research centers consist of teams working on both activities: *"Within all our centers you would have all of those. You would have people doing exploration, who are people working on things that are maybe for the future, and on the exploitation side, people who are working directly with the marketing teams in order to get products to market for tomorrow"* (Interview 3, l. 64-67) Therefore, they engage in exploration and exploitation depending on the project or the task.

Regarding any tension between the implementation of both activities, "*there is no challenge when it is clear what the expectations are, the challenges only come when the expectations aren't clear*" (Interview 1, l. 50-51).

Company C

In the last interview, Interviewee C describes the open-innovation system set in Company C. As mentioned in the company description, they use a scale from 1 to 9 to generate innovation in the market (TRL). The innovation happens in the early stages, from 1 to 3. It comes from external resources (national labs, universities, inventors) but also from internal resources (innovation team). These people generate ideas but do not have the resources (intellectual, structural, financial) to implement them, so the company takes care of the development phase, meaning phases 3 to 6. *"These people are good to come up with new ideas, but they do not have the capability, the structure and the know-how to develop them from an invention into an innovation"* (Interview 2, l.24-26). Therefore, in the exploitation phase, the development team creates a successful prototype to be developed and introduced to the market, as mentioned by Mr. Philippe: *"We develop, making sure that everything works, that it complies with whatever norm, that it can be produced*

in mass-production with feasible costs and with known materials in the automotive industry" (Interview 2, l.36-39) They transfer the technology to their clients, responsible for the phases 7 to 9 which are the final steps before the mass production of the technology or product for the market.

Figure 11: Company C operational model

Source: Based on Company C official website

Interviewee C evokes some paradoxes emerging from their engagement in both exploration and exploitation. The first paradox is time: the innovation team has no time limit and can take a week, a month, a year to come up with a bright idea. On the other hand, the development team is time restrained as they must develop it as soon as possible. Sometimes conflicts occur because one team does not understand why there are different rules for the others.

Another paradox is the budget. Innovation costs nothing and can be available at any time. However, some financial restrictions limit this innovation. As explained by Mr. Philippe, *"The innovation in itself costs nothing. You pay the salary of the people no matter what, and there is virtually no additional cost. It is all brain power, services and PCs, software but we have them, so there is virtually no variable cost. However, as the company is constrained by financial resources, and the development costs a lot of money, we are not in a financially sustainable situation yet"* (Interview 2, l. 86-90). While an idea could be the brightest, if there are no financial resources then it could not be sent to the next stage. Interviewee C gives the following example, *"we have a very good idea that qualifies all the three criteria previously explained, and yet we cannot go forward because it would mean spending money in the prototypes, putting the engine in the test-sale and everything. We are talking about a million euros easily and we don't have the resources at this given point in time."* (Interview 2, l. 91-95). In other words, the company asks the innovation team to not focus on time and budget constraints, the budget remains a final key decision factor.

	Company A	Company B	Company C
Exploration activities	Marketing & Sales units	Teams of exploration Ex: Research team	External teams (ex: Universities, labs, inventors) Internal team (ex: Innovation Team)
Exploitation activities	R&D units Advanced Engineering units	Team of exploitation Ex: Operational Marketing and Supply Chain	Development team
Tensions	Not mentioned	No tensions occur if the expectations are clear	Difference in time focus for both teams and budget restriction
Comments	Very costly to manage these activities	Centers gather both exploration and exploitation teams	The budget is a main decision factor.

Table 3: Comparison table regarding exploration and exploitation within firms
Source: Author analysis from the study

As mentioned by the first interviewee, it is relatively expensive for firms to be ambidextrous across the organization. Subsequently, company A requires many human resources and financial resources to explore and exploit at its best potential. In this case, they can have both exploration and exploitation units within the organization. However, in the case of Company C, it is cheaper for them to outsource a part of the innovation. Furthermore, Interviewee C explains how relatively cheap it is to innovate while it is more difficult to develop the innovation due to budget restriction. The exploitation phase is therefore limited. Because this topic has not been discussed by Interviewee B, the author believes that they do not have any major difficulty regarding resources and therefore the company can focus on exploiting no matter the cost and the people needed.

Proposition 1: MNCs and SMEs have different ways of engaging in both exploration and exploitation due to the number of resources available.

4.2 Organizational Structure

Company A

As a big firm, Company A follows a matrix structure where the organization is divided according to countries, clients and product lines. Each division (country, client, product lines) has a respective manager, and the manager of the product lines oversees a subsidiary. In addition, it was mentioned how each entity is isolated from each other to focus on their task. Interviewee A mentions that *"the matrix structure was not very linked to the organization"* (Interview 1, l.112-113). He gives the example of a strategic meeting with a client during which the persons responsible for the client and those for the product discuss strategy, but the presence of the country manager is not mandatory. Therefore, not everyone is included, and he also explains that such firms try to limit the resources needed as there are expensive. In other words, they try to be efficient with the necessary number of people needed. To ensure the coordination between all entities, Interviewee A clarifies that *"every committee has a meeting point with these entities. These entities refer to a general direction and to lighten this work the advanced engineering entity report directly to the general direction, which judges what should do the product lines according to the findings."* (Interview 1, l.126-129).

Regarding exploration and exploitation, these activities are separated within the organization. However, *"we know that two employees who work in an office next to each other do not necessarily talk to each other. If there is no meeting organized, they do not meet."* (Interview 1, l.134-136). Subsequently, there are also disadvantages of using this structure as it creates isolation. To comment on this structure, Interviewee A stated that *"organizations need to create a structure with boundaries by telling people what they need to do or not, but this structure also results in constraints and limits the development"* (Interview 1,177-179). In other words, the firm needs a structure to "*ensure efficiency but also to give some freedom to innovate*" (Interview 1, l.185-186).

However, as he worked for an SME afterward, he asserted that the organizational structure is responsible for the success of the firm to remain innovation. In this smaller firm, they used to be organized according to the product lines like in big firms, and it was not successful. They switched to a domain separation which deleted the boundaries between

each product and created new connections between the products. The decisions and results were more harmonized, and many innovative ideas emerged after this restructuration.

Company B

Following the same path, Company B is also organized according to a matrix structure even though Interviewee B insisted on the fact that they keep adapting their structure to environmental changes. As of now, they are switching from a structure based on departments where tasks were implemented from departments to departments to a structure based on projects. In this structure, people from different departments work together on a project and can, therefore, learn from others. "*It is a bit more of a structure that you would find in companies that are a bit more start-up or even consulting companies*" (Interview 3, l.25-26). As a matter of fact, Interviewee B described two reasons for this shift. The first reason is beating the market: "*to speed things off because you know things are happening so quickly in the world and I think it's much quicker when you have this team of people from different departments working together than the process of handing off as described before when one department finishes the part then they hand it to the next department etc…*" (Interview 1, l. 31-34). The second reason is efficiency: better results are observed when people with different functions collaborate; they bring more creativity. Also, she highlighted that the most important in this structure is to put the right people, at the right place, on the right project.

One caveat of this structure is the expertise of everyone. It is crucial for the employees to preserve their own expertise because one might lose focus or expertise when interacting only with people from other functions. Interviewee B also explains how important it is to stay in touch with people who share the same expertise to develop oneself from both a career and a personal point of view. Also, as the company is following a matrix structure, it means that all managers must report to the ones above and this significantly slows down the decision-making process. Nevertheless, there are many benefits from such a structure as long as complexity is avoided in the best manner. In other words, it is important to monitor "*the complexity of a matrix organization to be sure that you are getting the benefits of it but that you're not getting too much complexity"* (Interview 3, l. 59-61).

Company C

In a smaller context, Company C is using an open-innovation structure. As mentioned previously by Mr. Philippe, the firm is making the transition between the research and the industry. Both exploration and exploitation teams are separated in a way that it is composed of different people with a different set of skills and type of organization. However, while the firm maintains constant communication with the external innovation teams, the internal innovation team is in the same building than the development team. Both teams work in an open space and interact together every single day, "*they have small talks every single day, and they respect each other and admire the other*" (Interview 2, l. 65-66). They know how to value the work of the other team, and each team member has expertise in the field. Interviewee C also stated that even though the idea goes from the innovation team to the development team, it is not always a one-way process. When the development team finds itself stuck at some point, it does not hesitate to go back to the exploration team to find a solution. *"Sometimes it is the development people who are stuck with something […] and they go back to the innovation people!"* (Interview 2, l. 71-73). Therefore, while it looks like a process, the firm is always preserving their start-up mindset as "*the essence"* of the firm (Interview 2, l.83), where there are a flat hierarchy and lot of interaction. This creates a space for both creativity and efficiency. This decision on maintaining a start-up spirit has been chosen by a team of experienced managers with the majority coming from big firms.

Furthermore, Interviewee C mentioned that their official organizational chart is not representative of their real structure. *"If someone reads our organizational chart, this person will miss a lot of information"* (Interview 2, l.161). He also stated that the chart gives a formal structure to the company, but there exist many relationships invisible to any external perspective. As they maintain a start-up spirit, it implies that one person can be responsible for many other things that is initially not their responsibility.

	Company A	**Company B**	**Company C**
Organizational structure	Matrix Structure (countries, clients, product-lines) Structural separation of exploration and exploitation activities.	Matrix structure Shift from department divisions to team divisions Separation of tasks among the teams	Open-innovation structure Structural separation Contextual ambidexterity
Main comments on the structure	Positive: Committees help coordinating decisions Negative: Structural structure can lead to isolation	Positive: Team projects helps to react quicker and to bring more creativity Negative: Keeping the expertise Slow decision-making process	Positive: Allows creativity and efficiency
Coordination required between	- Entities (Marketing and Sales, R&D) - People working for the same product or country or client	- Top managers and team decision maker - Team members	- Innovation and development teams - Team members

Table 4: Comparison table of the organizational structures implemented
Source: Author analysis from primary data collection

According to the three interviews, there is a need for coordination at both unit and individual levels. While an organizational structure depends on the business itself and the objectives to be reached, the three companies explained that the organizational structure is responsible for the success of the company. This structure should encourage a high coordination level between the employees and consequently between the units. Among MNCs and SMEs, it also seems essential to have a multidirectional information flow to support ambidexterity. Therefore, the findings lead us to the following proposition:

Proposition 2: To ensure ambidexterity in both MNCs and SMEs, the organizational structure should rely on coordination at both units and individual levels and should allow a multidirectional information flow.

4.3 Managing Ambidextrous Structures

Company A:

As mentioned previously, Company A is facing some challenges regarding the communication across the different entities as they all have different tasks and objectives. While these entities are separated, they all work with the same goal, which is to make the business successful. Indeed, Interviewee A was a country manager in India and had the responsibility of the product team and the country team. He explains that at this time, the firm realized that some countries were more profitable than the others and they needed to solve this issue to increase the sales revenue. While in India, Interviewee A realized that the people working in the same country and on the same product had never met before. They would focus on their task and not take the opportunity to benefit from the others to increase efficiency. Therefore, these employees ended up taking wrong decisions and slowed down the projects. Once the issue recognized, Interviewee A organized a speed-dating event to connect the employees together, this led to an increase in revenue of 350,000 euros.

To avoid these challenges, Interviewee A explains that committees are now accountable for connecting the entities through meetings. Each committee connects the different entities and then refers directly to a management board. One advantage of these meetings organized by committees is that they bring people with different point of view together. Even though it brings some complexity because there are different points of view, it also generates innovation. Different entities come together to agree on one decision to be taken and it ensures a good communication of the objectives while involving everyone in the process. Also, *"the management team needs to know how to make people work together. To be honest, Company A had a really good capability to choose the right people to meet and work together. The organization was pretty well deployed"* relates Interviewee A. However, while Company A is recognized as very good at putting the right people to work together, Interviewee A points out that these people part of the committee are costly and therefore it is crucial for a big firm to create committees that are sustainable.

Furthermore, Interviewee A asserts that during structural transitions *"what matters is for people to find their position and to understand what and how they contribute to the firm. Whenever you ask people what their contribution is, they do not know.*" (Interview 1, l. 191-193). Therefore, it is essential for the employees to be able to attach a meaning to their work, especially in transition phases during which they might change tasks.

Company B:

From a managerial perspective, Interviewee B insisted that "*it is really about clarifying the expectations, the expected outcomes of each of those teams and how they would connect*" (Interview 3, l. 45-47). Indeed, it is important to recall that Company B is flexible across the organization and but also needs some pillars to rely on. According to Interviewee B, if the team knows what, where, when, how to do then there is no obstacle to their success. Therefore, the company relies heavily on communication. Also, she explained that it is all about keeping the complexity away and *"being sure that you identify who the decision maker is, not having too much of a team decision or too many bosses involved in the decision making"* (Interview 3, l. 74-76). Only one person should be the decision-maker to avoid back-and-forth with the team and to limit the involvement of too many bosses. The more straight forward the process, the better the outcomes.

According to Interviewee B, one key to success for a big firm is to be open to changes and to not rely on the same structure while the environment is changing. In the future, she sees more and more companies working in project mode with the objectives of placing "*the right people, in the right place, at the right time, on the right project*" (Interview 3, l.88-89). However, she insisted on the "*communication, clarification of the goals and the decision-making*" (Interview 3, l. 84-85) as to be the important pieces to prosperity within ambidexterity.

Company C:

To ensure ambidexterity, Interviewee C explains that communication is key, "*it's all about sharing information openly*" (Interview 2, l. 103). Also, Interviewee C ensures that sharing information all across the firm is essential to avoid any conflict in the organization. Furthermore, he explains the importance of managing the emotional level of the employees. He gives an example of an inventor who spent three months on a project and received encouraging feedback from his colleagues but receives a negative answer from

the management team. Consequently, it is crucial to value the work of everyone in the company and to make them feel like an important part of this business. Indeed, he said: "*I am tempted to say that it's all about loving your people and they will love you and do their work at their best*" (Interview 2, l.175-177).

Furthermore, he explains the difference between big firms and SME as being the level of interaction with the people. While there are many people to interact within big companies, this interaction is much stronger in a smaller team and makes everyone feel like a member of the team. Indeed, he concluded by saying the following: "*you have to share the vision, the excitement, the benefits, and identify each employee as a shareholder so if we succeed, it makes their pension, their vacation and their beach house etc.*" (Interview 2, l.180-182).

	Company A	**Company B**	**Company C**
Managing ambidextrous structures	- Committees gather different points of view and increase better decision making. - Ensuring communication between employees and between units.	- Clarification of objectives - Communication - Pushing away complexity by simplifying decision-making processes. - Adaptation, openness to structural changes	- Communication: sharing information openly - Identifying each employee as a shareholder

Table 5: Comparison table of the management practices for ambidextrous firms
Source: Author analysis from the primary data collection

Thus, the managerial implications to the previously stated challenges are quite similar. Company A explains the importance of bringing together people from different units for more efficient results and create a network of people instead of separated groups. Company B insists on communicating a clear vision and objectives to ensure their success while simplifying the decision-making process as much as possible. Also, Interviewee B

mentioned that a flat hierarchy is helpful in a sense that it allows everyone to take part in the decision. Lastly, Company C insists also on the communication factor, where a multidirectional interaction between all the people from the company is significant. If the employees can give meaning to their work, then they will deliver their best.

Proposition 3: To support ambidexterity in both MNCs and SMEs, communication between people from both exploration and exploitation units is essential as well as sharing a clear vision across the organization.

To conclude, this section includes the analysis of the data collected through the semi-structured interviews and results in three final propositions that would be further developed and related to the literature review in the next chapter. The tables 3, 4, and 5 help comparing the findings between the two MNCs and the SME. It is also important to notice that the differences do not occur only between MNCs and SMEs but also between MNCs themselves.

5. Discussion

5.1 Summary of Findings and Discussion

The main purpose of this research is to understand how firms structure their organization to develop their ambidexterity at its best. Through the data collected among two MNCs and one SMEs, we had the opportunity to compare the findings regarding the topic.

From this study, we drew three main propositions.

- Proposition 1: MNCs and SMEs have different ways of engaging in both exploration and exploitation due to the number of resources available.
- Proposition 2: To ensure ambidexterity in both MNCs and SMEs, the organizational structure should rely on coordination at both units and individual levels and should allow a multidirectional information flow.
- Proposition 3: To support ambidexterity in both MNCs and SMEs, communication between people from both exploration and exploitation units are essential as well as sharing a clear vision across the organization.

In the following section, the author will discuss the main findings of this study in relation to the existing literature on the topic.

5.1.1 Exploration and Exploitation within Firms

The first proposition concerns the degree of ambidexterity based on resources. The data reveals that a difference in resources leads to a different engagement towards exploration and exploitation between the firms.

In the literature, most scholars explain that exploration and exploitation require different resources and structures (Gupta, Smith, & Shalley, 2006; Levinthal & March, 1993; March, 1991; Tushman & O'Reilly, 1996). They focus mainly on the consequences that resource constraints can have on organizations according to their engagement in exploration and exploitation. In other words, if a firm does not have enough resources, then it cannot create a proper balance between exploration and exploitation. In our study, we could relate this situation to the two MNCs interviewed. These world-leading firms have enough resources to act according to the needs of their level of engagement in exploration and exploitation. As mentioned by Interviewee A, Company A affords such exploration units but not all the companies would be able to do so. In addition, the rise in the R&D

investment illustrated in figures 7 and 8 among both firms prove that it requires an important financial investment.

On the other hand, Company C has fewer resources that Companies A and B. As Interviewee C mentioned, some of their best ideas cannot be implemented due to a lack of financial resources. Therefore, the amount of available resources is one of the main determinants regarding their level of engagement in both activities.

Also, Cao et al. (2009) stated that a firm with more resources is more prompt to engage simultaneously in exploration and exploitation while those with fewer resources might have to pursue either one activity or manage trade-offs. Our findings match those of Cao et al. (2009) who argue that firms with a high level of resources can pursue simulteanously both activities (MNCs in this study). Nevertheless, Company C (SME) does have fewer resources but is still able to pursue exploration and exploitation simultaneously. Even though they need external resources due to financial reasons, they also have an internal exploration team. Their lack of financial resources might prohibit them from being more successful than they could be if they would have more resources, but they are able to maintain this productive ambidexterity.

Consequently, the amount of available resources is a main determinant for firms to engage in both exploration and exploitation but it does not imply that firms with fewer resources cannot remain competitive. While they have a different degree of ambidexterity due to resource constraints, they can always operate efficiently.

5.1.2 Organizational Structure

The second proposition is in regards to the organizational structure. As analyzed previously, the companies pointed out the importance for firms to ensure coordination on both units and individual levels supported by multidirectional information flows.

As many scholars asserted, it is a constantly changing process to design a proper organizational structure supporting ambidexterity (Duncan, 1976; Tushman & O'Reilly, 2011). From the interviews, we can relate this challenge to all companies A, B and C. As mentioned by Interviewee B, the pressures from the external environment are such that firms need to quickly adapt to the changes, especially through the organizational structure. Indeed, Interviewee A highlighted that innovation and quick adaptation to changes are made possible mainly through an efficient organization structure (Interview 1, l….).

When analyzing the organizational structure of Companies, A, B, and C, we could relate their structure to the structural separation studied by O'Reilly and Tushman (1996). Indeed, the explorative units are separated through the implementation of different managerial practices according to the people and their capabilities. While in the case of Companies A and B it seems logic due to their size, Company C is also separating both activities. However, the explorative and exploitative units are linked through a shared vision and corporate culture which was previously mentioned by (O'Reilly & Tushman, 2004).

In accordance to He and Wong (2004), the main challenge from this structure is to avoid isolation which happened in Company A. Nevertheless, Company A mentioned that isolation could not only occur on the organizational level but also on the individual level. Indeed, Interviewee A gave the example of his team in India who was not coordinated at all. If each individual connects to each other instead of isolating themselves, it facilitates the communication flow and leads to better efficiency.

This relates to the studies from Gibson and Birkinshaw (2004) about contextual ambidexterity. While each employee from Company A executes their tasks in the most efficient manner, they also need to explore possibilities and use others around them. Similarly, Company B is also implementing contextual ambidexterity. It has been stated by Interviewee B that the firm has to ensure that employees keep their expertise through team projects. Through this structure, employees need to learn new knowledge from the teamwork, but they also need to keep improving their existing knowledge.

Contrary to Company A, Company B is now shifting their organizational structure towards team projects such as consulting firms or smaller firms. In this sense, Interviewee B explained the necessity of quick moves to react to the changes and therefore to reorganize the activities in team projects. In connection with Lavie, Stettner, and Tushman (2010) studies about domain separation, Company B seems to lean towards a similar structure. Company B does not organize it according to domains, but instead, projects and this structure allows them to react quicker to changes. Lavie, Kang and Rosenkopf (2009) asserted that this structure is unlikely to be implemented among big firms due to the rigidity necessary. However, it seems that Company B is implementing it in its manner. In addition, Interviewee B explains the need to reduce the hierarchy to share information quicker which helps to react faster.

Furthermore, in the literature, some scholars introduced the sequential separation (Gupta, Smith & Shalley, 2006; Siggelkow & Levinthal, 2003). Through their studies, they found that implementing a decentralization between phases of exploration and exploitation is beneficial to the firms. While Company C is structurally separated, it has been mentioned by Interviewee C that the exploitation and the exploration teams go back and forth together to solve issues. Even though these are two different teams, they sometimes come together and create an in-between position. This could eventually be related to a sequential application.

5.1.3 Managing Ambidexterity

The third proposition applies to the managerial implications for proper ambidexterity within the firm. The results show that it is critical for both MNCs and SMEs to ensure communication and interaction between the employees no matter in which activity they have their focus. If this happens, it will ease the process of sharing the vision and will lead to common objectives.

In the literature, scholars précised the different managerial processes required for both activities. For example, Siggelkow and Levinthal (2003) studied the management systems and associated organic structures with explorative units and mechanistic structures to exploitative units. In our study, Companies A and C explained to us the difference between the management processes between both units. The main findings showed that explorative units must be designed in a way to ensure creativity and flexibility while exploitative units require rigor and stability. However, Company B did not mention any difference of management between explorative and exploitative teams.

Indeed, Company B highlighted the need to ease the decision-making process in a big firm. As there are many levels of managers, it takes some time to reach to the top manager. Therefore, they ease the decision-making process by limiting the number of people in charge of this decision as suggested by Benner and Tushman (2003) who previously commented on the limitation of managerial processes for exploration units. However, Company B is limiting these processes not only among exploration teams but also across the entire organization.

In the literature, Simseks, Ling, and Vinga (2006) assert that exploration units implement a bottom-top decision process whereas exploitation units implement a top-bottom decision process. In our case studies, it remains unclear. According to Interviewee A, the exploration teams in Advanced Engineering are effectively in charge of communicating the new potential paths for innovation to the top management, but nothing was mentioned for the exploitation teams.

In our study, companies B and C emphasize the importance of communication across the organization. From a top-bottom approach where the top managers can communicate and infuse a shared vision across all the organization to a bottom-top approach where employees from any unit can reach out to obtain or diffuse information. Also, company A underlines the relevance of connecting employees and units together to achieve a shared vision.

5.2 Theoretical Implications

Until recently, the literature has covered many topics regarding ambidexterity within firms. All definitions of exploration and exploitation converge in the same direction while the different structures supporting ambidexterity are being uncovered. As the need to be ambidextrous becomes more frequent among MNCs and SMEs, the literature will require adaptation and flexibility through the following years.

Indeed, the conducted research revealed that firms adapt quickly to the environment by shifting from one structure to another and by combining several ones at the same time. Until now, there is no exact combination leading to successful ambidexterity and therefore, firms adapt specifically according to their needs. Therefore, this adds to the literature the resilience required to ensure good ambidexterity among firms.

Also, the literature is mainly applying the concept to big firms and ignores smaller firms due to resource constraints. The findings from the conducted research show that not only firms with abundant resources can play with ambidexterity to succeed. Smaller firms can also use ambidexterity wisely according to their resources, but differently than bigger firms do. Indeed, our study also reveals different engagements for each firm towards exploration and exploitation depending on the objectives and the vision to be achieved.

Furthermore, this study brings our attention to the findings from Gibson and Birkinshaw (2004) that highlight the importance of contextual ambidexterity, meaning at the individual level. This study shows the importance of implementing a structure allowing coordination between organizational and individual levels and in a multidirectional manner. While the structure seems more important on the organizational level, it has consequences on the individual level. Nevertheless, if the individuals can reach ambidexterity then they will also bring an improvement at the organizational level.

Besides, this study agrees with the differences in management between exploration and exploitation units explained by several scholars (Russell and Russell, 1992; Siggelkow and Levinthal, 2003; Benner & Tushman, 2003) but it also creates a link between the two units. Our findings show that the two units need communication paths between them to ensure a shared vision and common objectives. For MNC and SMEs, it has been found that constant communication is key for success. Therefore, no matter which ambidextrous structure is chosen, good communication between the exploration and exploitation units allows the spread of a clear vision and better ambidexterity.

5.3 Managerial Implications

Based upon our findings, we believe that it is useful for managers to understand all the dimensions of an ambidextrous structure. To build efficient ambidextrous firms, it requires several implications.

While the exploration and exploitation units have different cultures and managerial processes for any MNC or SME, our findings show that they should be interconnected somehow. It is important to understand these differences as an exploration unit needs the context to be creative and innovative and an exploitative unit needs more structure to comply with the procedures. However, the study highlights the importance of linking these two different units together from an organizational level and an individual level. As seen in our study, a firm can link the units from an organizational level with committees responsible for the decision-making process. Also, the same firm can bring together employees to create synergy through networking events or other. In addition, managers should explain as many times as needed why both units are differently managed and how important the work of both units is.

Furthermore, our research underlines the requirement for big firms to simplify the decision-making process. Indeed, most MNCs follow a matrix structure that involved several levels of managers. To avoid any delay and to ensure a quick reaction to the environment, it should be considered by managers to make the decision process as simple as possible. In addition, our study suggests that all stakeholders should bring their opinion and thus, a different perspective to achieve better results.

Moreover, this study emphasizes the need to nurture people. From ensuring the personal development and the solidification of existing knowledge of an employee in an MCN to giving meaning to each action from an employee in an SME, managers should highly understand their people and act in accordance. Nowadays, we observe a higher necessity for employees to work meaningfully. Therefore, we advise managers to treat their people with care to get the best return out of it.

Lastly, to avoid any misunderstanding and conflicts from a managerial perspective, this study highlights the essentiality of sharing a clear vision and clear goals. Both SMEs and MNCs mentioned how crucial it was for them to share their vision across the organization. By doing so, it creates a smoother integration and implementation of the objectives.

6. Limitations and Further Research

Beforehand, it is essential to understand the limits of our study to ensure its validity and reliability. Indeed, the author recognizes that due to time constraints the study is not as well developed as it could be. While our study led to three propositions, those could be argued for the following reasons.

Firstly, the author learned the process of qualitative research along the process, which might need some further improvements. Also, the author is the only researcher who conducted the study and therefore chose a specific approach which could have been different for others. For example, in the coding process, other researchers could have determined different codes and could have led to other interpretations. Therefore, the point of view of the author could lead to bias even though neutrality was respected at its best. To improve the study, it would be beneficial to involve more than one researcher preferably with experience.

Secondly, only a small sample took part of the study: two MNCs and one SME. However, the semi-structured interviews provided rich and deep information to the study. In addition, the choice of these firms was made upon personal contact and availabilities of everyone and could be argued. Nevertheless, the choice of the person has been wisely chosen according to the topic of the study. Thus, the research could be further extended by interviewing either a bigger number of MNCs and SMEs or several employees from the same firm. Indeed, more interviews could have led to different propositions as there would be more insights. The more interviews, the better the validity and reliability of the study. On the other hand, the author was limited in the interpretation of the body language from all interviewees. In fact, all interviews were phone calls and did not give any other insights than the speech of each interviewee.

According to the findings, one area that could be explored is the relationship between the available resources and the engagement in exploration and exploitation activities. While some argue that the level of available resources is the main determinant for the degree of ambidexterity in which the firm can develop itself, our study reveals that it is not the only factor as SMEs can reach a high level of ambidexterity with fewer resources. As few scholars have explored this area (Cao et.al; 2009), further research could lead to a better understanding. Another potential area of research is the coordination required between

the exploration and exploitation units to be efficiently ambidextrous. While the current literature focuses on the differences between both activities, only few researches have been conducted to explain the common factors that connect them. In other words, how can these two units operate in synergy within a firm. Lastly, we found out that leadership was very important regarding the management required to ensure ambidexterity. Therefore, it would be valuable to connect our findings to studies related to ambidextrous leadership and to explore which leadership supports the vision, the objectives and the organization of MNCs and SMEs.

To summarize, the author acknowledges the limits of this study while encouraging further research. Indeed, the findings might vary if the sample size increases. However, this study opens new paths of exploration for future research and calls for a team of researchers to answer the unanswered questions previously described.

7. Conclusion

In this study, we contributed to a better understanding of the interplay between different organizational structures supporting ambidexterity within firms through qualitative research. In addition, we assimilated similarities and differences between MNCs and SMEs to enlarge the focus of the study. The findings show that there is no standard ambidextrous structure that applies to MNCs or SMEs. In fact, the degree of engagement in exploration and exploitation depends on many factors such as that available resources. However, other factors should be further considered. In addition, the findings reveal that firms tend to implement a structure that allows coordination on both organizational and individual levels while allowing multi-directional information flows no matter the type of organization. It is essential for firms to implement a structure supporting these activities if they want to develop their ambidexterity at its best.

Nevertheless, the organization relies also on essential managerial procedures to ensure the success of the firm. This study highlighted the importance of communicating a clear vision and well-defined objectives across each organizational level. Therefore, our study offers new paths for exploration to researchers who would like to pursue on this topic.

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Appendices

Appendix 1- Interview Guide

Interview Guide

- The interviews are supposed to last around 30-45 minutes
- Ask for the permission to record the interview
- The interviewee will remain anonymous

Introduction of the topic and focus of the study:

Topic: ambidextrous organization – organizations that are able to keep their existing business at its best level and to innovate within the same structure.

Focus: How these organizations balance exploration and exploitation within their organizational design – how organizational design helps to become ambidextrous .

Guideline topics:

Exploration: Any activity related to “the pursuit of new knowledge.” (Benner & Tushman, 2002). Example: “search, variation, risk-taking, experimentation, play, flexibility, discovery, innovation.”

Exploitation: Any activity related to "the use and development of things already known” (Benner & Tushman, 2002). Example: “refinement, choice, production, efficiency, selection, implementation and execution”.

Ambidexterity: an organization's ability to be efficient in its management of today's business and also adaptable for coping with tomorrow's changing demand. Therefore, the ability to manage both exploration and exploitation within the firm.

After giving the definition of ambidexterity, exploration and exploitation to the interviewee.

(Suite)

Organizational Structure

- As your firm is an example of ambidextrous firms, could you please tell me how the firm engages in exploration and exploitation?
- Could you describe me the current organizational design or at the time you worked there?
- Has the firm always used this organizational design in relation to ambidexterity or has it tried other designs before?
    - If no, could you describe me the reasons why the change occurred?

Paradoxes within ambidexterity

- By definition, some paradoxes emerge from the pursuit of both exploration and exploitation. Therefore, what paradoxes has the firm faced in relation to ambidexterity?

To keep in mind:

- Long term vs short term
- Stability vs flexibility
- Present vs Future
- Certainty vs uncertainty

- Thus, how is the firm able to manage these paradoxes?

Solutions to manage ambidexterity within the structure

- Do you see any challenges that the firm is facing while trying to balance both exploration and exploitation?
- According to your experience, what are the managerial implications to ensure ambidexterity?
- According to your experience, what is critical for firms to do in order to be ambidextrous and successful?

Appendix 2 – Interview A (Company A)

C: Regarding the topic of ambidextrous organizations, you mean the ability of each organization to evolve while remaining innovative. Personally, this topic concerns mainly the big firms because ambidexterity is generated through human resources and managerial activities. Small firms might not have the resources and might be limited. In addition, they are specialized into a domain and if there is founder/manager very focused… but it is not every time the case. Sometimes one can be in the second or third generation, and these people who have a new spectrum can bring some new perspectives to the business.

We realize that innovation is very often born from a revolt ability or a situation, e.g someone who enter his car and hurts his back every time will say that the way we enter a car is anti-ergonomic and on the ergonomic aspect, it is obvious that we hurt ourselves. Thus, he will invent something. Many inventions come from an uprising. This was the first aspect.

However, there are some inventions coming from a collision meaning that one technology meets another one and for me the best example is Apple. Iphone is the crossing point between a phone, music, TV and many technologies. All of them are connected together and there are many more…. As now we can also pay with the phone. And out this collision comes a new product. To give you another example, in the automobile industry, I previously worked at Company A and Company X and we made parking sensor which is very useful because now if a car does not have it, it becomes hard for some of us. Then I worked for Plastic Omnium which is the specialist for plastic auto body. They were working on the powered tailgate which allows the opening of the gate when pressing the button. So, the problem with the powered tailgate is that when the car enters the garage, this tailgate might touch the roof as we never know what the height of the garage is. As I was coming from Company A with an expertise in the parking sensor, I said that we simply needed to put parking sensors at the bottom of the tailgate for them to detect the roof when getting closer. Instead of making “bip-bip”, it could also trigger a stop for the tailgate and whenever he gets as close as 20-30cm from the roof, it automatically stops using the parking sensors. So, we filed a patent for it and this innovation came from a collision between my previous expertise on parking sensor and my new life as manufacturer of powered tailgate and plastic auto body.

J: That can also be considered as an incremental innovation then…

C: Exactly, so this was from a more general perspective. It is very important to see how we generate innovation. After, the innovation goes, as people say, we need to look at the client. Okay, this is the classical view. We say that we do what the client wants, and it is perfect. The problem being that the client does not know what he wants. When we say that, it sounds like beautiful marketing courses – we are client-oriented, we focus on the market and we make products fitting the market needs. But the market does not know exactly what is wanted and what is a real innovative product. Wherever we talk about big innovation, we have to be careful. For example, the POST-IT results from a mistake in a laboratory. They made a glue that couldn't dry. And they asked themselves what they could do with it and nowadays it is a must worldwide. Therefore, there are many innovations that start from a revolt resulting into an idea and the creation of a product answering a specific need.

J: I understand very well. Now, let's take it to a bigger scale. For example, an organization such as Company A, how do they stimulate this innovation within the organization?

C: In the firm, there will be… Actually, what is needed is to work on different axes: the market-push with ideas that come internally, market-pull with idea extracted from the outside, and there could also be technology driven - new technologies bring new possibilities that will generate innovation. It is also market-push but the initiating point is different. That means that in a big firm there are entities: entities market-oriented (Client-marketing organization), entities internally oriented such as R&D and Advanced Engineering. It is indeed very advanced as it is more 10-20 years and you have people that are paid to do only this. So, on one side you have one entity and more precisely, in California there is a team of 100 people, in Zurich 30 people, and these are people working entirely on models - they are in 2030 now. They reflect on the societal evolution or on the main current issues: new life-styles, over-population etc… and they reflect on the needs generated in order to find paths of innovation. For example they would say: the global warming leads to such things, therefore we need to answer it in the following manner, or such technology for internal combustion won't be acceptable anymore because it wouldn't work if the external temperature is high than supposed to. Thus, it is an important centre of reasoning.

J: These information, or path of innovation, are transmitted in which manner to the global business?

C: There are regular communication and presentations regarding market trends or societal trends etc…

J: So, they actually prepare the work and then, once viable, they send it for execution?

C: They are very far from the project, they are outside of the operation units. They can observe many needs and trends, if they have ideas they can insert them into the system but what their objective is to frame what will be done in the business and to show where are the opportunities for growth. They are totally isolated and do not have anything to do with the production. They present the trends, and it gives instructions to the company. I think it is also called long-term landscape teams...

J: How do they maintain this connection with the central unit?

C: We ask them questions according to the domains of the firm such as how will look the evolution of delivery services in 15 years according the evolution of online shopping, offline store. Thus, how Company A in the field of home appliance and small tools and spare parts can adapt its products to the new trends. The new European spaces are still in national logistics, how can it change in the future? These trends can be explored by these people and can be extended to new means of transportation, will the individual cars still exist in 30 years. We observe that people have highly enjoyed individual cars until now but there is a trend for carsharing emerging. Here they will have a lot of work. How will be the status of energic consumption, would the gas still be there? Etc… Company A have this luxury but not everyone can afford it.

Then you have the R&D, product-oriented with different branches such as automobile, small appliances and home appliance. Here they develop new products according to certain criteria. For example, in the home appliance products, they launched the black collection. Nobody had ever produced black appliances (fridge, stoves..) but it was very successful. There existed only appliances in inox, yellow or built-in and they started with the black collection that many others followed then. It's not about technology but this is innovation and people work on it. Then, they also work on ergonomic aspects such as the baskets in the dishwasher or the efficiency of washing programs. This is the classical R&D.

The Research teams work on these new technologies that improve the products and the Development teams make the defined product. Along these processes, there is some innovation because people have questions and difficulties to find solutions. These innovations happen along the process with new ideas about a specific topic. I remember when Renault launched first the radio control on the steering wheel, and they did calls for tenders and a hundred of projects where submitted regarding this topic. People who were interested got ideas along the process of a defined product. The confrontation with a new topic leads to innovation in general. That's the innovation the comes naturally.

Then there is the innovation coming from the services of Marketing and Sales which represent the needs from outside because there is also a need for innovation in the external environment. For example, a coffee machine that can clean itself etc.. Everything we can imagine. This is the market need for improvements and is done by the entity Marketing and Sales.

The question being: how do we intermingle everything?

In a big firm, there is always a matrix structure with the risk that matrices do not talk to each other. However, puzzlingly at Company A, the matrix structure was not very linked to the organization. Indeed, there was an organization country with a manager for each country and a manager of the manager of countries, an organization commercial for each client with a manager for each client all-products, I was in charge of a client. Then you have product lines. For each product line, you have a manager. For example: Diesel, gasoline, GPS, laundry machine etc… For each product line, there is an entity which has all the functions to develop the product. They buy, conceptualize and sell the product. So, the manager of the product line is the manager of the subsidiary. Then, these subsidiaries interact together when for instance, doing a strategic committee with a client bringing the people responsible of the product and the people responsible for the client. Those responsible for the country are not necessarily present. When you work on a factory project, you will have the product-people who want to build the factory and the people from the country when the factory will be built. So you don't have the people responsible for the client. However, every committee has a meeting point with these entities. These entities refer to a general direction and to lighten this work the advanced engineering entity report directly to the general direction, which judges what should do the product lines according to the findings.

The issue in the firms with different entities is to find sustainable committees that do not consume too many resources because these people are expensive. Especially at Company A, these costs were very high.

J: These entities were therefore physically separated right?

C: Most of the employees lived in the same building. But the committees were responsible for connecting the entities together. We know that two employees who work in an office next to each other do not necessarily talk to each other. If there is no meeting organized, they do not meet. To give you an example, when I started at Company A and I saw that the sales revenues were insufficient. However, we had good revenue figures in some countries but bad in other ones. So I was managing both product-people and country-people and I realized that those people did never meet before. Someone who was in India and in charge of doing an alternator for 100000 parts per year, did not know who to ask for help. He ended up asking the wrong person most of the time and it would slow down every time. My first initiative was to organize a speed-dating with all the employees from the product- and country-teams. And it was incredible, the next day the people knew each other and worked very well together. It led to + 350 000 euros of revenues. The management team needs to know how to make people work together. To be honest, Company A had a really good capability to choose the right people to meet and work together. The organization was pretty well deployed.

J: How would you define as advantages associated with this structure?

C: The objective was that people come to the meetings bearing a different point of view. It can lead to a complex situation where someone negotiate an increase in resources for his client while the other division does not want to increase those due to the limited lifetime of the products within the next generations. They do not want to invest in this generation but on the following ones. In this case, we can decide to not go further with the client because we consider that it is more important to focus on the next generations and not on products that will last 5 years. Even though 5 years seems long enough, it is not worth it at the end. There are also some incompatibilities to manage within the organization, but the objective is to make the entities work together. And what is important to give a good innovation activity is to keep all the entities which use different approaches with different points of view regarding the clients, the products, society. There is also the individual capacity of people to innovate to be considered but it has to be well managed.

Once everything is smoothly coordinated and these activities cross at one point in the firm, you should be able to move forward.

J: You just said that innovation can also happen on an individual level, could you tell me more about it, please?

C: There is an important aspect of the individual innovation to take into consideration but I think it is primarily the organization that will generate the innovation. For example, Company X was organized in very narrowed product lines: clutch, alternators and starters, windshield wipers, A/C, engine cooling.. so primary functions. We can tell that there was a problem with innovation, we could not find a solution for it. We followed the globalization process however we were not innovative enough. Therefore, one of my clients told me that we should better organize the firm according to domains, meaning to delete all the boundaries and to regroup everything linked to the propulsion (clutch, automatic transmission, electric propulsion etc…), to the comfort (vision, windshield wipers, GPS, A/C). Thus, we defined several domains and gathered activities within these domains. Surprisingly, right after doing this, we generate many ideas to create an interaction between the functions. We generated innovation.

To run the business, organizations need to create a structure with boundaries by telling people what they need to take care of or not, but this structure results in constraints and limit the development. The example of Apple that I previously gave you is perfect. In addition, there were people experts in HiFi, radio, telephone, car dashboard … And today, you enter a car and everything is inside. Everything is interconnected. All the functions are now linked to one unique function. It was the result of a de-partitioning – before everyone took care of its own product without communicating with others and "every man for himself".

It is another paradox that firms encounter: The need to have structure to ensure efficiency but to give some freedom to innovate.

J: Changing from one structure to another might take some time and resources also, right?

C: The most important is to manage the transition phase. It can be really painful, I saw some groups where people did not know what they were supposed to do anymore. Managing transition is something but changing the organization is not an issue if the job def-

inition is well done, with defined objectives. What matters is for people to find their position and understand what and how they contribute to the firm. Whenever you ask people what their contribution is, they do not know. Political deployment, task definition are the basics that need to incorporate the innovation processes. It will determine if the company is innovative or not. Everybody can be innovative, but they need the mean to express the innovation, in particular through the organization.

J: Regarding the innovation process at Company A, do they constantly innovate, meaning in continuity?

C: Exactly, I would define that as the DNA of the company. Sometimes the innovation coming from outside tends to be ignored because people do not appreciate what was not innovated internally but this happens in many companies. With German companies, it is a matter of demonstrating.

J: How important would you consider the innovation focus at Company A relatively to their main business?

C: It is very difficult to answer this question because Company A evolved a lot in the past few years, you should look at some statistics. If you look at the annual reports and check the percentage of automotive products, I would think that the non-automotive products share has doubled since then. I cannot tell you what they exactly did, but they must have done something to develop new activities. In the automotive industry, Company A being very technology-driven, many products are innovation. The diesel systems and gasoil being replaced by electric solutions, the sales revenue renews itself via innovation. It does not have to be drastic innovation, but they do bring an important level of change. An alternator generating only electric current and an alternator that does starter and startup for the cars nowadays, is also an innovation. Looking at the share of them among the sales it should represent at least 50%, excluding the new activities. It is definitely a firm with products in constant development, there is not many old products.

J: Lastly, you just said that Company A innovates continuously but would there be a time period where they accent innovation more than the existing business?

C: No, it is a continuous effort. Everything in the firm is structured in a way that innovation can happen. They organize client-days, which is an innovation day with the clients

during which we present our ideas and we listen to theirs. This also happens with providers, people go to seminar to get some inspiration. Anyway, the organization is always looking for ways to stimulate innovation. It comes from outside, inside the company. It brings us back to what I said, there are the innovation from the people, market push, market pull and a need for changes according to the society that constantly changes.

Appendix 3 – Interviewee B (Company B)

J: As your firm is an example of ambidextrous firms, could you please tell me how the firm engages in exploration and exploitation?

B: So, I think one the things you could say about our company is that we don't have just one way of organizing necessarily. We do have, I guess you could say, teams that focus on these areas of what you would call exploration and exploitation. So, within our what you may call ambidextrous organizational structure, we do have certain teams that work specifically on one side or the other. To give you an example, we teams that are working on a [....] which would be kind of the exploration phase and some of our research teams are working completely on the exploration side and they are also working in, you know, expert teams that do that kind of work. Then on the exploitation side, I would say that would be more about our teams that are in either supply chain or even some of our operational marketing teams that are really focused on making what exists already in the best, executing it in the best way possible. So we definitely have different teams, focused on different areas which then leads to an organizational structure that I think more probably have the three of those.

J: How is the current organizational design of the firm, are these activities physically separated or integrated?

B: We are always changing our structure and I would say that the evolution that is coming now is moving from an organizational structure that is like specific departments that could then, it is more about the process of handing off from one department to the next, to an organizational design that is based on projects where you would have different people from different department working on the same projects. So that would be a very ambidextrous organizational structure and design where you have people with different functions working together. So we are involved in much more towards that, and it is a bit more of a structure that you would find in companies that are a little bit more start-up or even consulting companies for example that you know put the right people in the right place at the right time for the right project as opposed to just saying: okay because you are in this department, you do your part and you hand it off to the next person.

J: Could you tell me the reasons why this change is occurring?

B: It is in order to speed, one to speed things off because you know things are happening so quickly in the world and I think it's much quicker when you have this team of people from different departments working together than the process of handing off as described before when one department finishes the part then they hand it to the next department etc.. So one reason is to beat the market. The other is that we find that we get better results when we have collaboration and we get better creativity when people from different areas, different levels, different expertise are together doing the same job.

What you have to watch out for a structure like that, that might come with the next question, but you need to make sure that you keep the expertise. Because if you're just the one person in a team of people that have an expertise in something, you need to keep connected to all these people that have the same expertise of yours for your own development, your development of expertise.

J: Would you see any other paradox when engaging in both exploration and exploitation?

B: I do not think that there is any paradox as long as it is clear what the expectations are, of those teams and how they would work together. So it is really about clarifying the expectations, the expected outcomes of each of those teams and how then they would connect. Other than that I don't think there is a paradox between because you need both.

J: And would you explain to me if you are facing any challenge with exploration and exploitation?

B: There is no challenge when it is clear what the expectations are, the challenges only come when the expectations aren't clear. But if it is clear that the team is working on something, very far upstream downstream, you know what the expectations are. And you know, it puts everything together. This requires a lot of communication.

One of the things that we could say about our organizational structure is that it is highly matrix. Many people have, you know, report in to a local management as well as global management as well as the functional boss as well as a local boss so that is where the paradoxes are. There are different things that are great about that, all the pieces are connected through communication and then on the other side there is a complexity in terms of slow decision making. That's something that would need to be watched out, the complexity of a matrix organization to be sure that you are getting the benefits of it but that you're not getting too much complexity.

J: I saw that you have research centers and evaluation centers around the world. Are the exploration and exploitation teams divided within these centers?

B: Within all our centers you would have all of those. You would have people doing exploration, who are people again working on things that are maybe for the future and on the exploitation side, people who are working directly with the marketing teams in order to get products to market for tomorrow. So you would have, maybe in the research center, a broader array of these kinds of people but you would have them all over the organization.

J: What would be the managerial implications to make sure that the ambidexterity is well sustained?

B: Ensuring a shared vision, ensuring communication, clarity of goals and expectations. Again keeping an eye on the matrix organization to make sure we are not doing anything to make it more complex than it is. Being sure that you identify who the decision maker is, not having too much of a team decision or too many bosses involved in the decision making. I think these are the things we continue to look at and we did to look after when we have a structure that is a bit flexible. Also, a flatter structure where there is not a big hierarchy is very helpful.

J: What would be critical for a firm to ensure that its ambidexterity leads to success?

B: I think also, being open to changes. Meaning changing your organizational structure when necessary like I said, we are still shifting to be more working on project-working mode more and more, so I think you need to be open and not so sat on the structure that you have. I guess this is part of being ambidextrous right? I think that's one thing and the rest of the things I already mentioned them: communication, clarification of the goals, clarify around decision making are the important pieces.

J: Do you have any thoughts for the future of organizational design?

B: I think in order to keep up with the future, more companies would have to work a bit more in project mode and again, finding a way to put the right people in the right place, at the right time on the right project and not be so stuck on having people within departments that can't move. Because the workload shifts, because the expertise needed on different projects shifts, so I think we're going even need to be even more flexible in the

future in order to meet the quick pace of what's going on externally. We're not going to be able to be tied to something that's very structured.

Appendix 4 - Interviewee C (Company C)

C: I would like to talk about Company C as it is the best example. When I was with Volkswagen or Ford I was working mainly downstream. I was actually selling or marketing so I was already out of the production line. I had my words into features for next-generation products but I was not actually involved in this there. All we do is research, research, research and development.

J: All right, then let's start with the first question. Then, could you tell me how Company C is engaged in the exploration and exploitation activities?

C: In the exploration, we have an open innovation mode, so we develop relationships with entities such as national labs, universities, inventors etc. To characterize it, we use what we call the technology readiness level scale, I don't know if you are familiar with the TRL. Basically, it is a scale that was developed originally by the department of defense in the US and it scales from 1 to 9 to characterize new stuff. 1 is "I have an idea", 9 is "I have feedback from mass-market or mission feedback". In the automotive industry, it would be mass-market feedback that means the technology is on the road at scale. For defense, it is "I fired the missile and it did or did not hit." And so, 1 is "I have an idea" etc with a first preliminary prototype in the lab environment, then the first prototype in real life environment etc. So the scale is 1 to 9, the labs, universities usually go until 3 and the ---- goes 6 to 9 and we are positioned in the middle. So we have an open innovation mode to get discussions, to get ideas coming from a number of parties. It could be internal, we have innovation cluster here at MC5 or it could be external: inventors who contact us, we have agreements with universities such as Argonne national lab in the US, with CEA and ISP in France etc. And these people are good to come up with new ideas, but they do not have the capability, the structure and the know-how to develop them from an invention into an innovation. And this is what we do. So, we have an open innovation mode upstream then we qualify the ideas which basically three criteriC: 1 - Can it work in real life in mass production from a technical standpoint? 2- Is there a market potential for this technology? 3- Can we patent because obviously we sell and transfer technology so we sell IP right. So if there is no IP potential then we just say no.

We want, once this is developed to TRL 6, meaning that we have a prototype that works in a car, or in a corporate environment which is a car for us, and we can and visit the industries to whom we would like to show and ask if they are interested.

So this is exploration.

Regarding exploitation, for us, this is everything we do in development from TRL-3 until TRL 6-7 before we transfer the technology to our customers. We develop, making sure that everything works, that it complies with whatever norm, that it can be produced in mass-production with feasible costs and known materials in the automotive industry etc…

J: Thus, regarding the organizational design, these two activities are separated but integrated into one cycle?

C: They are separated, they are. Because it is not the same skills, not the same people, not the same structure, not the same organization. They are very separated. Within MC-5 and elsewhere, because for instance labs going from TRL-1 to TRL-3 they have no idea and are not interested in what is happening in TRL- 4 5 6.

J: So how would you describe to me the current organizational design?

C: So, we have external innovation teams such as universities and labs but we also have our internal innovation team which keeps developing ideas, talking to inventors and coming with crazy ideas and everything. Then we filter these ideas, we qualify some, and if the idea is qualified, then another team does the development. On the innovation side, people are extremely creative, they work with almost no constraint. They don't care about cost, about feasibility, mass-production. They don't care about all these constraints and they shouldn't! Because if they start thinking about everything, they would come to the conclusion that it is not feasible, and this would kill the creativity, innovation. We tell them to not worry about it, just to dream. It is like day-dreaming, go ahead, you have an idea crazy or not, I want to see it. And then we will decide if it is crazy or not. But, go ahead, no time, no cost, no quality, no constraint. Whatever pops to your mind crack it. Spend a few days, weeks or months on it and come back to me.

Then we will talk development those are people who are going to apply processes, really care about norms, costs, all these bad words for the innovation people. And different mindsets, skills, everything.

J: Do these two structures interact together? Are they physically separated?

C: They are interacting a lot. They are in the same building, we have an open space here, they are in the same open space. They have small talks every single day, and they respect each other and admire the other. The development people admire the innovation people

because they always come up with new ideas out of nowhere. And the innovation respect and admire the development guys who can cope with all the constraints and they keep working. Making sure that the norms, making sure that the costs, making sure that the supplier etc.. Then it is just a burden. They know it is necessary but they do not want to hear about it. And they are very happy that the development people can take care of it. So they work together, they talk to each other. Because also sometimes, it is the development of people who are stuck with something, it doesn't work or they cannot find the right product or the right suppliers... And they go back to the innovation people! They tell them where they are stuck and they get some help.

J: As the company is pretty young but managed by experienced managers, could you tell me more about the role of your expertise in the organizational design?

C: I have a relative experience in this field. Again, most of my career I was selling finished products. But the team here, my colleagues in charge of research and development they lived this world forever. But they know what works, what doesn't work and the one particular thing about Company C is that we try to maintain a start-up spirit. We are relatively small, we are talking about around 75 people here. We try to maintain this open-space policy, open book, open communication, open everything. And this is actually the essence.

J: Would you say that some paradoxes emerge when engaging in both exploration and exploitation?

C: Yes, every time, every day. The number 1 is the budget, money, resources location. The innovation in itself costs nothing. You pay the salary of the people no matter what, and there is virtually no additional cost. It is all brain power, services and PCs, softwares but we have them so there is virtually no variable cost. However, as the company is constrained by financial resources, and the development costs a lot of money, we are not in a financially sustainable situation yet. The company is too young to be profitable yet, so we are always short of cash. So in some instances, we have a very good idea that qualifies all the three criteria previously explained, and yet we cannot go forward because it would mean spending money in the prototypes, putting the engine in the test-sale and everything. We are talking about a million euros easily and we don't have the resources at this given point in time. Sorry, very good idea but no we cannot proceed.

The other thing is the innovation people can come with a really brilliant idea which will work, it will make the difference but for whatever reason, we cannot patent it. This is another case where we have to drop this idea. Because we cannot make money out of the idea if it is not patentable. Why investing something where we cannot make money?

So these are the kinds of paradoxes we face on the daily basis.

J: Therefore, how is the firm managing these paradoxes?

C: It is all about people. It's all about sharing information openly, explaining. People are not dumb, they do understand. Emotionally speaking, this is another thing. Intellectually speaking, they all understand. We're talking about people with doctors, this and this, PhD all around, very smart and very bright people. Now emotionally, this is a different thing because if you, as an inventor who spent like 3 months on one specific topic, and everyone tells you that this is a great idea, it would make a difference but then you receive the answer no. We don't go forward because we are short on cash or because this is not our priority or because there is another idea, even though less brilliant that we could actually sell and make money out of it. Intellectually speaking they do understand, emotionally speaking they do not. And again, in the innovation lab we have people used to no limits and we try to maintain this no limit mindsets. We have to manage the emotional level of these people. It's all about making sure we have daily communication with them, that we nurture them, we value what they do no matter what, no matter we can or cannot go forward. So again, open everything.

The innovation people do not care about timing. It is not their business. And the development people they are accountable, they measured again with the project management office. They have daily reviews, daily progress review. So it is very short term, every day or every week. Whereas the innovation people, you tell them: could you spend a couple of hours or weeks or months on this idea and come back to me when you've got something. And it could be 4 weeks like it could be 6 months. Timing is not an issue for them, it shouldn't be an issue or a constraint.

They are also used to work in a much more flexible way. Sometimes they would work 4-5 hours a day but most of the time it would be close the 16-18. When they have the idea, that they want to pursue it. You know, really in this creative mood. It goes the other way around. I mean, sometimes you have to keep them out of the office and to tell them to go home.

And the development team is more structured. They have to report very frequently, if it is Tuesday at 9am that they have the report session then this is Tuesday 9 am. This is a very centralized management system with processes and norms and methods that are used in all development. Quality control and everything has to be monitored in files, checks etc.. Extremely structured.

J: From the managerial point of view, what do you think are the managerial implications to ensure that ambidexterity is developed at its best?

C: Again, it's all about people and making sure that they do understand each other to some extent and they can explain different things. Why we could constraint some and not the innovation people regarding time and budget? Why would we reward the development people when they get back to you in time and why it does not matter if the innovation people get back to you next week, next month or next year. It's all about making sure that they keep talking to each other and they keep respecting each other. When the community is under stress, for whatever reason, they tend to work like hell to be extremely physically tired sometimes and then the risk of tensions and clashes between the community because they don't understand why the others are living differently. So it is all about making sure that they share the same level of information or appropriately because the development people do not care about some other things that the innovation people care for and vice-versa. It's about staying very close to them, very close.

And for me, as I am doing business development, I am considered to some extent as external towards the people. And I like the open communication and when I go for small talks about this and that. What do you think? What is happening in Japan? How about Chrysler? What you think about anything even if it is remotely related to our business. Short-term or long-term consequences of events on our business. And this is this communication that has nothing to do with no hierarchy, no nothing. Anyone in the team has small talks with others and it keeps people together and also gives them a deep breathe. They can step out of their screen or software or stimulation. As long as we give them the perspective of why they are doing this, why the neighbor is doing something totally different everything is fine. You have to share the vision for them to be willing to accept the burden.

J: Regarding the organizational structure, how is the firm organized if it maintains a start-up spirit?

C: If someone reads our organizational chart, this person will miss a lot of information. There are a lot of dotted lines, we share some responsibilities and also exchanges. Just to give you an idea, when we talk about innovation, the end goal is to patent idea. Now, our person in charge of the patent applications and everything is not part of the innovation team. She said 90% comes from innovation and 10% comes from legal aspects. And in our chart, you would not see that. So the chart is very structured, formal and gives a big picture. But in the office, everything is open space, open door or open communication as we try to do so. We operate with agility so sometimes it goes in every direction, and it can get very crazy. So the chart is very useful for the launch scale organization and does not really quite reflects how SMEs work. For example, my title is business development, but I do many other things. I am in charge of writing fundraising and PR and it does not show up on the chart.

J: Last question, if you could share two main points that are critical for firms to become ambidextrous and successful, what would they be?

C: It's all about people, about sharing a vision. Caring for your people. I am tempted to say that it's all about loving your people and then they will love you and do their work at their best. It seems to be... I have been working for organizations with 500 000 people and I was right before with a company with 5 people. Now that I have 75 colleagues, I would say that the big difference is the way you interact with those people and make them part of the team as a whole. You have to share the vision, the excitement, the benefits, and identify each employee as a shareholder so if we succeed, it makes their pension, their vacation and their beach house etc.

Appendix 5 – Coding

Interview A (N=3)	Interview C (N=3)	Interview B (N=3)
Exploration and exploitation		
Exploration and exploitation\Exploitation description		
Then you have the R&D, product-oriented with different branches such as automobile, small appliances and home appliance. Here they develop new products according to certain criteria. For example, in the home appliance products, they launched the black collection. Nobody had ever produced black appliances (fridge, stoves..) but it was very successful. There existed only appliances in inox, yellow or built-in and they started with the black collection that many others followed then. It's not about technology but this is innovation and people work on it. Then, they also work on ergonomic aspects such as the baskets in the dishwasher or the efficiency of washing programs. This is the classical R&D. **(l. 87-96)** The Research teams work on these new technologies that improve the products and the Development teams make the defined product. 97-98 (0) Exploration and exploitation\Exploitation Marketing and Sales which represent the needs from outside because there is also a need for innovation in the external environment. This is the	We want, once this is developed to TRL 6, meaning that we have a prototype that works in a car, or in a corporate environment which is a car for us, and we can and visit the industries to whom we would like to show and ask if they are interested. **(l.31-33).** Regarding exploitation, for us, this is everything we do in development from TRL-3 until TRL 6-7 before we transfer the technology to our customers. We develop, making sure that everything works, that it complies with whatever norm, that it can be produced in mass-production with feasible costs and known materials in the automotive industry **(l.35-39).** Then we will talk development those are people who are going to apply processes, really care about norms, costs, all these bad words for the innovation people. And different mindsets, skills, everything **(l.59-61).** The development people admire	Then on the exploitation side, I would say that would be more about our teams that are in either supply chain or even some of our operational marketing teams that are really focused on making what exists already in the best, executing it in the best way possible. **(l.11-15)** And on the exploitation side, people who are working directly with the marketing teams in order to get products to market for tomorrow. **(l. 66-67)**

market need for improvements and is done by the entity Marketing and Sales. **(l.105-109)**	the innovation people because they always come up with new ideas out of nowhere **(l.65-66)**. And the development team is more structured. They have to report very frequently, if it is Tuesday at 9am that they have the report session then this is Tuesday 9 am. This is a very centralized management system with processes and norms and methods that are used in all development. Quality control and everything has to be monitored in files, checks etc.. Extremely structured **(l.129-133).**	
Exploration and exploitation\Exploration description		

It is indeed very advanced as it is more 10-20 years and you have people that are paid to do only this. So, on one side you have one entity and more precisely, in California there is a team of 100 people, in Zurich 30 people, and these are people working entirely on models - they are in 2030 now. They reflect on the societal evolution or on the main current issues: new life-styles, over-population etc… and they reflect on the needs generated in order to find paths of innovation. For example, they would say: the global warming leads to such things, therefore we need to answer it in the following manner, or such technology for internal combustion won't be acceptable anymore because it wouldn't work if the external temperature is high than supposed to. Thus, it is an important center of reasoning. **(l.55-65)** They are very far from the project, they are outside of the operation units. They can observe many needs and trends, if they have ideas they can insert them into the system but what their objective is to frame what will be done in the business and to show where are the opportunities for growth. They are totally isolated and do not have anything to do with the production. They present the trends, and it gives instructions to the company. I think it is also called long-term landscape teams... **(l.70-77)**	In the exploration, we have an open innovation mode, so we develop relationships with entities such as national labs, universities, inventors etc. **(l.10-11).** So the scale is 1 to 9, the labs, universities usually go until 3 and the ---- goes 6 to 9 and we are positioned in the middle. So we have an open innovation mode to get discussions, to get ideas coming from a number of parties. It could be internal, we have innovation cluster here at MC5 or it could be external: inventors who contact us, we have agreements with universities such as Argonne national lab in the US, with CEA and ISP in France etc. And These people are good to come up with new ideas, but they do not have the capability, the structure and the know-how to develop them from an invention into an innovation. And this is what we do. So we have an open innovation mode upstream then we qualify the ideas which basically three criteria: 1 - Can it work in real life in mass production from a technical standpoint? 2- Is there a market potential for this technology? 3- Can we patent because obviously we sell and transfer technology so we sell IP right. So if there is no IP potential then we just say no. **(l.19-30).**	To give you an example, we teams that are working on a [....] which would be kind of the exploration phase and some of our research teams are working completely on the exploration side and they are also working in, you know, expert teams that do that kind of work. (l. 8-11) B: Within all our centers you would have all of those. You would have people doing exploration, who are people again working on things that are maybe for the future **(l.64-65)**

	Within Company C and elsewhere, because for instance labs going from TRL-1 to TRL-3 they have no idea and are not interested in what is happening in TRL-4-5-6. **(l.43-45)** On the innovation side, people are extremely creative, they work with almost no constraint. They don't care about cost, about feasibility, mass-production. They don't care about all these constraints and they shouldn't! Because if they start thinking about everything, they would come to the conclusion that it is not feasible, and this would kill the creativity, innovation. We tell them to not worry about it, just to dream. It is like day-dreaming, go ahead, you have an idea crazy or not, I want to see it. And then we will decide if it is crazy or not. But, go ahead, no time, no cost, no quality, no constraint. Whatever pops to your mind crack it. Spend a few days, weeks or months on it and come back to me. **(l.50-58).** And the innovation respect and admire the development guys who can cope with all the constraints and they keep working. Making sure that the norms, making sure that the costs, making sure that the supplier etc.. Then it	

	is just a burden. They know it is necessary but they do not want to hear about it. And they are very happy that the development people can take care of it. **(l.67-70)** They are also used to work in a much more flexible way. Sometimes they would work 4-5 hours a day but most of the time it would be close the 16-18. When they have the idea, that they want to pursue it. You know, really in this creative mood. It goes the other way around. I mean, sometimes you have to keep them out of the office and to tell them to go home. **(l.124-128)**	
Exploration and exploitation\Tensions		
	Yes, every time, every day. The number 1 is the budget, money, resources location. The innovation in itself costs nothing. You pay the salary of the people no matter what, and there is virtually no additional cost. It is all brain power, services and PCs, softwares but we have them so there is virtually no variable cost. However, as the company is constrained by financial resources,	There is no challenge when it is clear what the expec-tations are, the challenges only come when the expectations aren't clear. But if it is clear that the team is working on something, very far upstream downstream, you know what the expectations are. And you know, it puts everything together.

	and the development costs a lot of money, we are not in a financially sustainable situation yet. The company is too young to be profitable yet, so we are always short of cash. So in some instances, we have a very good idea that qualifies all the three criteria previously explained, and yet we cannot go forward because it would mean spending money in the prototypes, putting the engine in the test-sale and everything. We are talking about a million euros easily and we don't have the resources at this given point in time. Sorry, very good idea but no we cannot proceed. The other thing is the innovation people can come with a really brilliant idea which will work, it will make the difference but for whatever reason, we cannot patent it. This is another case where we have to drop this idea. Because we cannot make money out of the idea if it is not patentable. Why investing something where we cannot make money? So these are the kinds of paradoxes we face on the daily basis. **(l. 86-101)**	This requires a lot of communication **(l. 50-53)**

Managerial implications		
Managerial implications\Managing ambidexterity		
However, every committee has a meeting point with these entities. These entities refer to a general direction and to lighten this work the advanced engineering entity report directly to the general direction, which judges what should do the product lines according to the findings. **(l. 125-127)** But the committees were responsible for connecting the entities together **(l. 133-134)** The management team needs to know how to make people work together. To be honest, Company A had a really good capability to choose the right people to meet and work together. The organization was pretty well deployed. **(l.145-147)** What is important to give a good innovation activity is to keep all the entities which use different approaches with different points of view regarding the clients, the products, society. There is also the individual capacity of people to innovate to be considered but it has to be well managed. Once everything is smoothly coordinated and these activities cross at one point in the firm, you should be able to move forward **(l.157-162).**	So they work together, they talk to each other. Because also sometimes, it is the development of people who are stuck with something, it doesn't work or they cannot find the right product or the right suppliers... And they go back to the innovation people! They tell them where they are stuck and they get some help. **(l. 70-74)** The one particular thing about Company A is we try to maintain a start-up spirit. We are relatively small, we are talking about around 75 people here. We try to maintain this open-space policy, open book, open communication, open everything. And this is actually the essence. **(l.79-83)** It is all about people. It's all about sharing information openly, explaining. People are not dumb, they do understand. Emotionally speaking, this is another thing. Intellectually speaking, they all understand. We're talking about people with doctors, this and this, PhD all around, very smart and very bright people. Now emotionally, this is a different thing because if you, as an inventor who spent like 3 months on one specific topic, and everyone tells	There is no challenge when it is clear what the expectations are, the challenges only come when the expectations aren't clear. But if it is clear that the team is working on something, very far upstream downstream, you know what the expectations are. And you know, it puts everything together. This requires a lot of communication. **(l.50-53)** Ensuring a shared vision, ensuring communication, clarity of goals and expectations. Again keeping an eye on the matrix organization to make sure we are not doing anything to make it more complex than it is. Being sure that you identify who the decision maker is, not having too much of a team decision or too many bosses involved in the decision making. I think these are the things we continue to look at and we did to look after when we have a structure that is a bit flexible. Also, a flatter structure where there is not a big hierarchy is very helpful. (**l.72-88)**

Organizations need to create a structure with boundaries by telling people what they need to take care of or not, but this structure results in constraints and limit the development **(l. 177-179).** The most important is to manage the transition phase. It can be really painful, I saw some groups where people did not know what they were supposed to do anymore. Managing transition is something but changing the organization is not an issue if the job definition is well done, with defined objectives. What matters is for people to find their position and understand what and how they contribute to the firm. Whenever you ask people what their contribution is, they do not know. Political deployment, task definition are the basics that need to incorporate the innovation processes. It will determine if the company is innovative or not. Everybody can be innovative, but they need the mean to express the innovation, in particular through the organization **(l.188-197)**	you that this is a great idea, it would make a difference but then you receive the answer no. **(l.103-109)** We have to manage the emotional level of these people. It's all about making sure we have daily communication with them, that we nurture them, we value what they do no matter what, no matter we can or cannot go forward. So again, open everything. **(l.113-116)** Again, it's all about people and making sure that they do understand each other to some extent and they can explain different things. **(l.136-137)** So it is all about making sure that they share the same level of information or appropriately because the development people do not care about some other things that the innovation people care for and vice-versa. It's about staying very close to them, very close**. (l.144-147)** And this is this communication that has nothing to do with no hierarchy, no nothing. Anyone in the team has small talks with others and it keeps people together and also gives them a deep	I think also, being open to changes. Meaning changing your organizational structure when necessary like I said, we are still shifting to be more working on project-working mode more and more, so I think you need to be open and not so sat on the structure that you have. I guess this is part of being ambidextrous right? I think that's one thing and the rest of the things I already mentioned them: communication, clarification of the goals, clarify around decision making are the important pieces. **(l.80-85)**

	breath. They can step out of their screen or software or stimulation. As long as we give them the perspective of why they are doing this, why the neighbor is doing something totally different everything is fine. You have to share the vision for them to be willing to accept the burden. **(l.152-158).** It's all about people, about sharing a vision. Caring for your people. I am tempted to say that it's all about loving your people and then they will love you and do their work at their best. It seems to be... I have been working for organizations with 500 000 people and I was right before with a company with 5 people. Now that I have 75 colleagues, I would say that the big difference is the way you interact with those people and make them part of the team as a whole. You have to share the vision, the excitement, the benefits, and identify each employee as a shareholder so if we succeed, it makes their pension, their vacation and their beach house etc.. **(l.174-181).**	
Managerial implications\Communication		
There are regular communication and presentations regarding market trends or societal trends etc… **(l.67)** We ask them questions according to the domains of the firm such as how	They are interacting a lot **(l. 63)** We have to manage the emotional level of these people. It's all about making sure we have	

will look the evolution of delivery services in 15 years according the evolution of online shopping, offline store **(l. 77-79)** We know that two employees who work in an office next to each other do not necessarily talk to each other. If there is no meeting organized, they do not meet. To give you an example, when I started at Company A and I saw that the sales revenues were insufficient. However, we had good revenue figures in some countries but bad in other ones. So I was managing both product-people and country-people and I realized that those people did never meet before. Someone who was in India and in charge of doing an alternator for 100000 parts per year, did not know who to ask for help. He ended up asking the wrong person most of the time and it would slow down every time. My first initiative was to organize a speed-dating with all the employees from the product- and country-teams. And it was incredible, the next day the people knew each other and worked very well together. It led to + 350 000 euros of revenues. **(l.134-144)**	daily communication with them, that we nurture them, we value what they do no matter what, no matter we can or cannot go forward. So again, open everything. **(l.113-116)** So it is all about making sure that they share the same level of information or appropriately because the development people do not care about some other things that the innovation people care for and vice-versa. It's about staying very close to them, very close**.** **(l.144-147)**	

Managerial implications\Reasons for changes		
		It is in order to speed, one to speed things off because you know things are happening so quickly in the world and I think it's much quicker when you have this team of people from different departments working together than the process of handing off as described before when one department finishes the part then they hand it to the next department etc.. So one reason is to beat the market. The other is that we find that we get better results when we have collaboration and we get better creativity when people from different areas, different levels, different expertise are together doing the same job. **(l.31-38)**
Organizational Structure		
Current design		
That means that in a big firm there are entities: entities market-oriented (Client-marketing organization), entities internally oriented such as R&D and Advanced Engineering. (l.53-55) Matrix structure with the risk that matrices do not talk to each other. (l.111).	They are separated, they are. Because it is not the same skills, not the same people, not the same structure, not the same organization. They are very separated. **(l.42-43).** So, we have external innovation teams such as universities and labs but we also have our internal	The things you could say about our company is that we don't have just one way of organizing necessarily. **(l.4-5)** So we definitely have different teams, focused on different areas which then leads to an organizational structure that I think more

Indeed, there was an organization country with a manager for each country and a manager of the manager of countries, an organization commercial for each client with a manager for each client all-products, I was in charge of a client. Then you have product lines. **(l. 113-116)** For each product line, you have a manager. For example: Diesel, gasoline, GPS, laundry machine etc… For each product line, there is an entity which has all the functions to develop the product. They buy, conceptualize and sell the product. So, the manager of the product line is the manager of the subsidiary. **(l.116-119).** Most of the employees lived in the same building (l.133).	innovation team which keeps developing ideas, talking to inventors and coming with crazy ideas and everything. Then we filter these ideas, we qualify some, and if the idea is qualified, then another team does the development. **(l.47-50).** They are in the same building, we have an open space here, they are in the same open space. They have small talks every single day, and they respect each other and admire the other. **(l. 63-65)** If someone reads our organizational chart, this person will miss a lot of information. There are a lot of dotted lines, we share some responsibilities and also exchanges. Just to give you an idea, when we talk about innovation, the end goal is to patent idea. Now, our person in charge of the patent applications and everything is not part of the innovation team. She said 90% comes from innovation and 10% comes from legal aspects. And in our chart, you would not see that. So the chart is very structured, formal and gives a big picture. But in the office, everything is open space, open door or open communication **(l.160-167)**	probably have the three of those. **(l.14-16)** We are always changing our structure and I would say that the evolution that is coming now is moving from an organizational structure that is like specific departments that could then, it is more about the process of handing off from one department to the next, to an organizational design that is based on projects where you would have different people from different department working on the same projects. So that would be a very ambidextrous organizational structure and design where you have people with different functions working together. So we are involved in much more towards that, and it is a bit more of a structure that you would find in companies that are a little bit more start-up or even consulting companies for example that you know put the right people in the right place at the right time for the right project as opposed to just saying: okay because you are in this department, you do your part and you hand it off to the next person. **(l.19-29)**

		One of the things that we could say about our organizational structure is that it is highly matrix. Many people have, you know, report in to a local management as well as global management as well as the functional boss as well as a local boss so that is where the paradoxes are. There are different things that are great about that, all the pieces are connected through communication and then on the other side there is a complexity in terms of slow decision making **(l.54-59)** Within all our centers you would have all of those. You would have people doing exploration, who are people again working on things that are maybe for the future and on the exploitation side, people who are working directly with the marketing teams in order to get products to market for tomorrow. So you would have, maybe in the research center, a broader array of these kinds of people but you would have them all over the organization. **(l.65-69)**

Organizational structure\Domain separation		
For example, Company X was organized in very narrowed product lines: clutch, alternators and starters, windshield wipers, A/C, engine cooling.. so primary functions. We can tell that there was a problem with innovation, we could not find a solution for it. We followed the globalization process however we were not innovative enough. Therefore, one of my clients told me that we should better organize the firm according to domains, meaning to delete all the boundaries and to regroup everything linked to the propulsion (clutch, automatic transmission, electric propulsion etc…), to the comfort (vision, windshield wipers, GPS, A/C). Thus, we defined several domains and gathered activities within these domains. Surprisingly, right after doing this, we generate many ideas to create an interaction between the functions. We generated innovation. **(l. 166-176).**		
Organizational structure\Advantages of the structure		
The objective was that people come to the meetings bearing a different point of view **(l. 149).**		There are different things that are great about that, all the pieces are connected through communication **(l.57-58)**
Organization Structure\Challenges of current structure		
However, puzzlingly at Company A, the matrix structure was not very linked to the organization **(l.112).**		What you have to watch out for a structure like that, that might come with the next question, but you need to make sure that you keep the

Then, these subsidiaries interact together when for instance, doing a strategic committee with a client bringing the people responsible of the product and the people responsible for the client. Those responsible for the country are not necessarily present. When you work on a factory project, you will have the product-people who want to build the factory and the people from the country when the factory will be built. So you don't have the people responsible for the client. **(l.119-124)** The issue in the firms with different entities is to find sustainable committees that do not consume too many resources because these people are expensive. **(l.129-130)** We know that two employees who work in an office next to each other do not necessarily talk to each other. If there is no meeting organized, they do not meet. To give you an example, when I started at Company A and I saw that the sales revenues were insufficient. However, we had good revenue figures in some countries but bad in other ones. So I was managing both product-people and country-people and I realized that those people did never meet before. Someone who was in India and in charge of doing an alternator for 100000 parts per year, did not know who to ask for help. He ended up asking the wrong		expertise. Because if you're just the one person in a team of people that have an expertise in something, you need to keep connected to all these people that have the same expertise of yours for your own development, your development of expertise. **(l.38-42)** Then on the other side there is a complexity in terms of slow decision making. **(l.58-59).** That's something that would need to be watched out, the complexity of a matrix organization to be sure that you are getting the benefits of it but that you're not getting too much complexity. **(l.59-61)**

person most of the time and it would slow down every time. My first initiative was to organize a speed-dating with all the employees from the product- and country-teams. And it was incredible, the next day the people knew each other and worked very well together. It led to + 350 000 euros of revenues. **(l.134-144)** It can lead to a complex situation where someone negotiate an increase in resources for his client while the other division does not want to increase those due to the limited lifetime of the products within the next generations. They do not want to invest in this generation but on the following ones. In this case, we can decide to not go further with the client because we consider that it is more important to focus on the next generations and not on products that will last 5 years. Even though 5 years seems long enough, it is not worth it at the end. There are also some incompatibilities to manage within the organization, but the objective is to make the entities work together. **(l. 150-158).** It is another paradox that firms encounter: The need to have structure to ensure efficiency but to give some freedom to innovate. **(l.186-187)**		

Organization Structure\Future Outlook		
		I think in order to keep up with the future, more companies would have to work a bit more in project mode and again, finding a way to put the right people in the right place, at the right time on the right project and not be so stuck on having people within departments that can't move. Because the workload shifts, because the expertise needed on different projects shifts, so I think we're going even need to be even more flexible in the future in order to meet the quick pace of what's going on externally. We're not going to be able to be tied to something that's very structured. **(l.87-93)**

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